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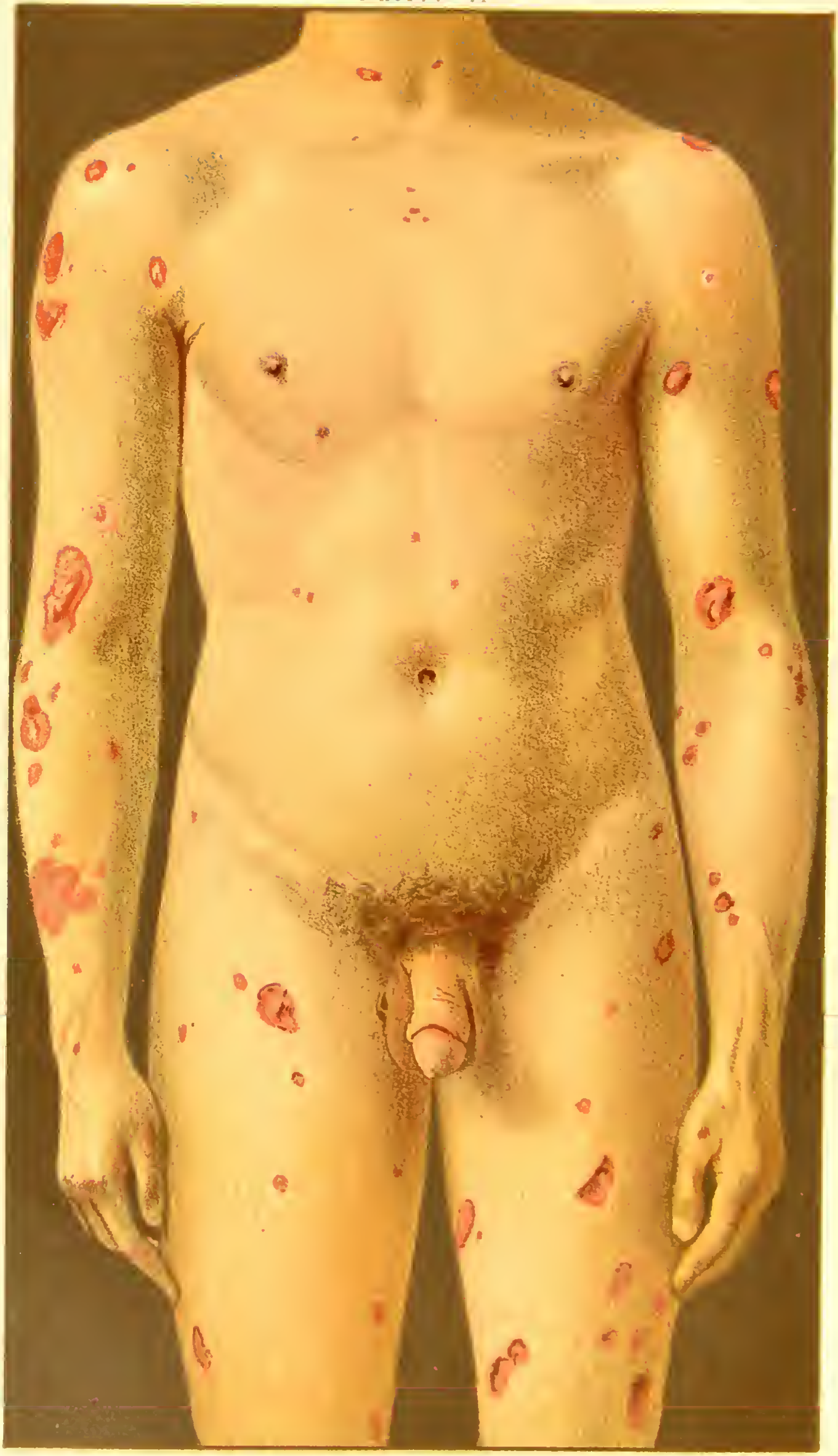
Buxton Shillitoe Esqre
with Alfred Coopers
Kindest regards
Jan 10th 1895.

SYPHILIS

PLATE II



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EXPLANATION OF PLATE XI.

Superficial serpiginous syphilide—*Frontispiece.*

43134

SYPHILIS

BY

ALFRED COOPER, F.R.C.S. Eng.

CONSULTING SURGEON TO THE WEST LONDON HOSPITAL; SENIOR SURGEON TO
ST. MARK'S HOSPITAL FOR FISTULA; LATE SURGEON TO
THE LOCK HOSPITAL, ETC.

SECOND EDITION

*ENLARGED AND ILLUSTRATED BY TWENTY FULL PAGE
PLATES, TWELVE OF WHICH ARE COLOURED*

EDITED BY

EDWARD COTTERELL, F.R.C.S. Eng.

SURGEON (OUT-PATIENTS) LONDON LOCK HOSPITAL, ETC.

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PREFACE TO THE SECOND EDITION.

THE First Edition of this work having been exhausted for some time, we have deemed it advisable, in issuing a Second Edition, to make many and important alterations and additions. These have been rendered necessary by the progress of knowledge in this department of venereal diseases during the ten years since this book was first issued.

All the chapters have been thoroughly revised, and several of them have been entirely rewritten; whilst a new one has been added on the relationship between Syphilis and Insanity.

A new feature of this Edition is the illustrations. The coloured plates are reproductions of original paintings taken expressly for this work. Plates V. VIII., and IX. are, with the kind permission of the author, reproduced from Dr. Crocker's work on Diseases of the Skin; whilst Plate XX. is from a photograph kindly lent by Dr. Colcott Fox.

With these exceptions, all the figures are original; and our thanks are due to Dr. Johnston English for photographing the microscopical preparations from which Plates IV., XVI., XVIII., and XIX. have been produced.

We wish to tender our best thanks to Sir William Dalby, to Dr. Buzzard, to Dr. Savage, and to

Mr. Anderson Critchett, who have kindly looked over the proofs of the respective chapters on the subjects with which their names are intimately associated. To Dr. T. P. Smith, of Ealing, also, we are indebted for valuable help during the revision of the proof sheets.

We believe that the work has been much improved by the changes and additions which we have made, and trust that it may prove a reliable help and guide to all who are engaged in the study of Syphilis.

ALFRED COOPER.

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EDWARD COTTERELL.

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December, 1894.

PREFACE TO THE FIRST EDITION.

Having been Surgeon to the Lock Hospital for nearly twenty years, and largely engaged in private practice during a still longer period, I have necessarily had ample opportunities for the study of venereal disease in all its forms. The treatise which I now submit to the judgment of my professional brethren is the outcome of the experience thus gained. In it are embodied certain conclusions, to which my personal observation has led me, as to the nature of syphilis and the way in which it may be most rapidly and effectually treated.

It is right that, at the outset, I should clearly state that I am not an adherent of either the Unicist or the Dualist theory respecting syphilis. Whilst fully convinced that the disease is due to a specific poison, I believe that the so-called "soft" sore is in no sense truly syphilitic, and that no special virus is required for its production. This point appears to me to be definitely settled by the experiments recorded in the fourth chapter of this work.

I have discussed in considerable detail the effects of syphilis on the internal organs of the body, and especially on the nervous system. Modern research has shown in how great a proportion of cases serious lesions of the brain and spinal cord are of syphilitic origin. It is, however, a satisfactory feature of these complications that in no class of nervous affections are better results obtainable by proper treatment thoroughly carried out.

My thanks are due to several friends for valuable suggestions. The chapter on Nervous Affections has been revised by Dr. Buzzard, whilst those on Diseases of the Eye and Ear have been subjected to the criticism of Mr. Anderson Critchett and Mr. Dalby. To Mr. Cartwright I am indebted for an account of his observations of the effects of hereditary syphilis on the teeth. I have also to thank my friend Dr. T. P. Smith, of Reigate, for much kind assistance in the preparation of this work, particularly in matters involving reference to French and German authorities. I have thought it undesirable to encumber my pages with a crowd of notes, but when statements are quoted, either contradicting or supporting my own opinions, care has been taken in every case to give the author's name. I venture to hope that the work may be of service both to students and practitioners.

ALFRED COOPER.

9, Henrietta Street,
Cavendish Square,
May, 1884.

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SYPHILIS.

CHAPTER I.

HISTORICAL INTRODUCTION.

In examining the writings of authors from an early period down to comparatively modern times, for the purpose of discovering whether they contain any statements which may justly be held to refer to syphilis, we come to a time which, certainly so far as Europe is concerned, forms an epoch, if not a starting-point, in the history of this complaint. From causes which will be presently discussed, the last decade of the fifteenth century is the period from which a definite history of syphilis commences, and the correctness of this statement is quite independent of the question as to whether or not syphilis was an absolutely new disease in Europe, at the time when it appeared in so virulent and striking a form. The controversies which have raged on this latter question have assumed enormous dimensions, but no generally accepted decision has been arrived at, though it would appear that the balance of probability is strongly in favour of one rather than of the other view.

There is no doubt that a severe epidemic of unmistakable syphilis raged in Europe about the year

1495, and some authors believe that this was its first appearance on this continent. Others maintain that syphilis has existed in Europe from the earliest times, but that the severity of the epidemic in 1495 caused it to be regarded as a new disease. A brief sketch of the controversies, and of the evidence with regard to the existence of syphilis in other continents, will indicate the degree of probability to be attached to one or other of these views.

The existence of syphilis in prehistoric ages has been inferred by Parrot and others, from lesions exhibited by certain bones exhumed in Saône et Loire, Peru, Colorado, California, and other places; but the evidence is by no means certain, and the conditions found can be explained by other causes. As regards the countries of the old world, syphilis is certainly a disease of great antiquity in China and India. In Chinese medical writings, some of them dating even further back than 2000 B.C., there are descriptions of contagious ulcers on the genital organs and of ulcerations of the mouth, throat, nose, and other parts, which correspond very clearly with the appearances due to syphilis. In the early part of the last century, the reports of Jesuit missionaries stated that the venereal disease was not only known among the Chinese at Pekin, but was also extremely common. In India, a medical work called the "Ayurvedas" of Suçrutas, written about the year 400, and intended as a complete system of Indian medicine, contains numerous passages which are justly held to refer to syphilis. Not only local but general symptoms are described. The author mentions ulcers on the genitals, warty excrescences in various parts, diseases of the eyes, ears and nose, buboes and nodes, and these latter affections are considered to be the consequences of the ulcers.

In Greek and Roman medical and non-medical literature there are numerous passages containing references to disorders of the genital organs. Different interpretations have been attached to these, according as the writer wished to find evidence for or against the existence of syphilis in Europe prior to 1495. Some passages in Hippocrates contain allusions to ulcerations of the mouth, sores and fungous growths on the genital organs, diseases of the eye, and various eruptions on the skin. Celsus devotes an entire chapter to disorders of the genital organs. He mentions in particular ulcers of two kinds, the first "clean and dry" and the second "moist and purulent." He also describes phimosis as due to ulcers, and directs that the prepuce should be drawn back in order to discover them. He mentions a phagedænic form of sore on the penis, and likewise ulcers of the mouth and tonsils and certain diseases of the skin. Another Latin writer, Aretæus, describes destructive ulceration of the uvula, hard palate and adjoining parts. Other writers mention mucous patches and chronic ulceration of the bones. With regard to non-medical writers, the works of the Latin poets, Martial, Juvenal, and Horace in particular, contain numerous allusions to venereal diseases, though several of such passages may admit of a different interpretation. The writings of Celsus, however, contain abundant evidence of the existence and recognition of venereal disorders at his epoch, and no more terse description of the hard and soft sores can be given than that which is to be found in the works of this author. It may be observed that it was the rule in his day for physicians and patients to exhibit great reticence with regard to any diseases of the genital organs.

Whether syphilis existed among the Jews is a question which cannot be determined from any passages in the Hebrew writings which have been supposed to refer to this subject. There is no definite resemblance between the symptoms of syphilis and those of any of the diseases mentioned in the Old Testament. The idea has indeed been mooted that leprosy was a form of syphilis, and it is by no means improbable that the former term was often applied to symptoms which were in reality manifestations of syphilis. There is, however, this fundamental difference between the diseases: the hereditary transmission of leprosy is generally denied, whilst the transmissibility of syphilis from parent to offspring is one of its most prominent features. Moreover, in those cases of leprosy in which hereditary tendency can be traced, the disease seldom makes its appearance before puberty. Some authors believe that leprous affections of the genital organs were the parents of syphilis, and that the urethral discharges, the ulcers, condylomata and fissures, which were even in the time of the Roman empire of such frequent occurrence, were, so to speak, a local reflex of the then generally diffused leprosy. It is far more probable, however, that these affections were really of an ordinary syphilitic character. We know that such forms of disease as scherlievo and radesyge, once referred to lepra and considered to be peculiar endemic affections of the skin, are really of syphilitic origin. The ancient writers had no assistance from the history of the case, for they were unacquainted with the fact that local venereal ulceration gives rise to cutaneous and other disorders. The connection between primary and secondary syphilis was unknown, and an extensive syphilitic disease of the skin was looked upon as an independent affection, and in all probability was often ascribed to leprosy. Such symptoms as ulcers of the throat, destruction of the nose, falling off of the hair, etc., are said to have occurred in severe cases of leprosy, but it is more than likely that they were of venereal origin.

Between the time of Celsus and the middle ages there are few records from which an account of venereal disorders can be gleaned. Local diseases of the genital organs and leprosy are, however, often alluded to. Some passages seem to show that the difference between hard and soft sores was already appreciated, not, however, as regards the special liability of the former to be followed by constitutional symptoms. It would appear that general infection of the constitution following an ulcer on the genitals was recognised as far back as the eleventh century. There is one passage from a writer of the fourteenth century, which proves that the indurated chancre was recognised and its consequences attributed to their proper source. Valesus, of Tarentum, stated, "Virga enim erat circumdata toto ulcere cancroso cum duritie . . . . et homo erat jam discoloratus et semi-mortuus." It is possible that, as already mentioned, the manifestations of syphilis were very generally ascribed to leprosy. The prevalence of this latter disease decreased towards the end of the fifteenth century, owing, perhaps, to the cessation of the Crusades. Be this as it may, it is certain that towards the close of that century, what appeared to be a new disease began to attract universal attention in Western Europe.

If the supposition be adopted (and no other seems tenable) that syphilis existed in Europe from the earliest periods of which there are any records, it is necessary to seek for reasons to account for the very virulent and wide-spread character of the epidemic in question. It is probable that a concurrence of circumstances favoured the aggravation of the virus. The extreme dissoluteness of the time, the inattention to ordinary hygienic rules, especially those of personal cleanliness, the inclemency of the season, inundations and dearths, the prevalence of scurvy and malignant fevers have been adduced as forming a combination, the union of which, with the syphilitic poison already present, may suffice to explain the singularly grave constitutional effects, differing from any known before or since that date. It is likewise probable that a severe type of syphilis was brought to Europe at this period, and, favoured by the above-mentioned circumstances, became rapidly superadded to the disease already existing. It is a well-known fact that the spread of syphilis is considerably accelerated, and the gravity of the symptoms very much increased, by unhygienic conditions. One marked example of this kind may be here cited. In Finland the disease was almost unknown before the beginning of the seventeenth century, or the period of the thirty years' war. It then broke out, and has since increased to so fearful an extent that, out of the limited population, within two years during the present century, 6000 cases have been treated in the Lock Hospital, and it is regarded by the authorities as the worst of all epidemics.

We learn from history that, in the autumn of 1494, Charles VIII., King of France, invaded Italy, and, marching through Lombardy, Tuscany, and the States of the Church, he entered the Kingdom of Naples in February of the following year, claiming that territory as his own by hereditary right. He left Naples at the end of May and returned to France a few months afterwards, leaving a portion of his army behind him. After a time the Neapolitans, having received aid from Spain, drove out the French and compelled them to quit the kingdom towards the end of the year 1496. During this period of about two years it is alleged that the venereal disease assumed the form of an intensely virulent and widespread epidemic, or, as others believe, it made its appearance in Europe for the first time. Those who adopt the latter theory connect the appearance of the disease at this time with the return to Europe of Christopher Columbus from America. This discoverer first left Spain in 1492, and reached Haiti, but he returned thence a few months afterwards. He again left Spain in September, 1493, and arrived in Hispaniola in November of that year. He appears to have been absent from Spain for three years, during which time portions of his fleet made several voyages to and fro, and arrangements were projected for the dispatch of a ship from Spain and from the Antilles every month for trading purposes. These arrangements appear to have been perfected before Columbus returned to Spain in June, 1496. It is asserted that on this occasion he brought with him two hundred soldiers infected with the venereal disease, and that the same complaint had appeared among persons who had previously returned from the West Indies. It is further stated that the venereal disease was a common distemper in Hispaniola and the neighbouring islands; that it was thence transported into Spain; and, lastly, that a remedy was sought for it from the same or neighbouring islands, whence it sprung, and was pointed out by some of the natives, when no medicine of sufficient efficacy could be found for it in Europe. All these assertions are probably true. There is contemporary medical evidence to the effect that the disease was a very common one in the West Indies, and that many of the Spaniards were found to be suffering from it on their return to Europe. The remedy alluded to was guaiacum, which was introduced into Europe in 1508.

The first importer went to the West Indies to discover how the natives there treated syphilis. He ascertained that guaiacum was employed, and he returned to Spain and commenced practice himself.

There can be little doubt that the disease thus imported from the West Indies was of a very severe type, or that the circumstances of the time were favourable to its rapid spread. In the Neapolitan, or rather in the Spanish, army, which was defending the Kingdom of Naples against the French, there were doubtless many soldiers who, returning from the West Indies, either in the first voyage with Columbus in 1493 or in some of the ships which afterwards returned to Spain, were still infected with the venereal disease, or had, at least, contracted it from some of the camp-followers. Many of the Neapolitans would probably also become infected, and as it appears that the success of the war continued doubtful for two whole years, and the same towns were taken and retaken by both parties, the disease would, of course, spread to the French invaders. It is difficult to conceive of any circumstances more favourable to the multiplication of cases of infection, and it is no wonder that the disease assumed an epidemic form among the three principal nations in Europe. About one-twentieth of the population were attacked; few died, but fewer still were quite cured. Its spread was further promoted by the mutual commerce which was carried on. The disease shortly afterwards became very prevalent in Portugal; it was there named the "Spanish disease," while the English, among whom the severity of the symptoms began to attract attention, called it the "French disease." Each nation endeavoured to cast upon some neighbouring nation the disgrace of having introduced the disorder.

In the century which followed the discovery of America, the spread of syphilis was further facilitated by the banishment of the Jews and Mahometans, who were driven out of Spain after the conquest of Grenada by Ferdinand and Isabella. Many of them passed over into Africa and carried the disease with them. The seaports of the Mediterranean also became rapidly infected. There can be no doubt as to the great virulence of the syphilis which prevailed at this period, and it was this marked characteristic which caused it to be regarded as a new disease; but we are by no means justified in accepting this belief as well founded, and in dating the origin of syphilis in Europe from the time of the Neapolitan epidemic. It is conceded, even by those who adopt this theory of the modern origin of syphilis, that the disease has often changed its character both as regards its violence and the nature of its symptoms.

This epidemic appears to have raged for about thirty years, towards the close of which period certain other of its symptoms attracted attention, and are mentioned in the works of the time. These were exostoses and other diseases of the bones and warty growths. A few years later the severity of the disease began to abate, and other symptoms are noticed. Thus in 1534 mention is made of tumours of the inguinal glands and falling off of the hair. It is stated that suppuration of the glands cured the disorder. The same account alludes to the hardness of the ulcers on the penis. Other symptoms which were then common were ulcers of the palate, uvula, fauces, and nostrils, nocturnal pains, gummata, and pustules and crusts all over the body. The falling off of the hair and the consequent baldness are frequently alluded to. About 1550 a virulent gonorrhœa appears to have attracted much attention, and was of course regarded as a symptom of syphilis. During the latter half of the sixteenth century the epidemic form of syphilis gradually disappeared.

There is little to add with regard to the history of syphilis since the last-mentioned period. Certain epidemics, presenting in their symptoms more or less resemblance to syphilis, have been described as occurring during the seventeenth and eighteenth centuries. These outbreaks were of an endemic character. Thus, a local outbreak occurred at Brünn in 1578. The complaint called yaws or framboœsia, outbreaks of which are not uncommon on the West Coast of Africa, is regarded as a manifestation of syphilis. So also the sibbens of the West of Scotland and the radesyge of Sweden and Norway are probably identical with syphilis. The Amboyna pimple, an epidemic of contagious herpes, and the pian of Nerac are likewise of the same character. They obtain their names from the predominance of some particular symptom. The most recent of these epidemics occurred in 1800 at Scherlievo, a village near the coast of the Adriatic. All these attacks presented a certain resemblance as regards the symptoms. Affections of the mouth and throat, eruptions on the skin, nocturnal pains in the bones and joints, tubercles followed by severe and deep-seated ulceration, caries of the bones, falling off of the hair, are more or less common in all of them. The extension, and in some degree the character, of the symptoms were doubtless influenced by the surrounding conditions. Scurvy was often simultaneously present, and must have aggravated all symptoms.

It has been already mentioned that certain writers, in the descriptions of the symptoms they witnessed during and after the great Neapolitan epidemic, expressly referred to the callous character of the sores.

The induration was soon regarded as symptomatic of a venereal ulcer. Frequent reference is made to it after the middle of the sixteenth century.

It is somewhat singular that in the early part of the sixteenth century gonorrhœa was recognised as a disease distinguishable from others communicated through sexual intercourse, and yet at the end of the seventeenth century the distinction was lost sight of. This at least is the inference that may be drawn from Sydenham's words, "Cujus virus cum per gonorrhœam non ejiciatur, sanguinis massam dicto citius pervadit inficitque." The question, however, was not suffered to rest, but it was not until the second half of the eighteenth century that the theory of the identity of syphilis and gonorrhœa was firmly opposed by Balfour, of Edinburgh, and Benjamin Bell, in opposition to John Hunter, who, as is well known, maintained the identity of the two diseases. In May, 1767, Hunter inoculated a person (probably himself) with urethral pus, believing it to be the product of gonorrhœa. It was, however, in all probability either the secretion from a concealed urethral chancre or some urethral discharge from a patient the subject of secondary syphilis. The result of the inoculation was not only a local ulcer, but also an affection of the throat, roseola, and other manifestations of the constitutional disease. This experiment was regarded as sufficient to establish the identity of the two diseases, and of the gonorrhœal and syphilitic poisons. The differences in the manifestations were supposed to depend upon the difference in locality; inoculation on a mucous membrane was thought to produce gonorrhœa, while inoculation on the skin gave rise to an ulcer. Bell's experiments showed the incorrectness of this theory, but the question was finally set at rest by those of Ricord, who established the axiom that the gonorrhœal secretion can never produce a chancre, and that the pus of a chancre can never produce gonorrhœa, and, therefore, that the contagium of gonorrhœa is different from that of a chancre and that of syphilis. Thus it came to pass that gonorrhœa was separated from the definition of syphilis. So late, however, as 1829 we find Sir A. Cooper denouncing the practice, common in London hospitals, of giving mercury for gonorrhœa. The next important landmark in the history of syphilis was the separation by Bassereau in 1852 of the primary sores into two classes, named respectively the soft and the hard. The further development of this theory, and its influence upon the doctrines of the present day, will be described in a subsequent chapter.

CHAPTER II.

THE GEOGRAPHICAL DISTRIBUTION OF SYPHILIS.

There would appear to be scarcely any part of the world absolutely free from the invasion of syphilis; but a brief account of our information as to its prevalence in different countries will show that great differences exist with regard to the frequency of its appearance and the intensity of its symptoms. As a matter of course, our information is more extended and exact with regard to Europe than for other quarters of the globe. To begin with the northern countries of that continent, all accounts agree in reporting a uniform and wide-spread prevalence of the disease in North Germany, Sweden, Denmark, and in most parts of Russia. With regard to the last-named country, I may mention that when I was in St. Petersburg in 1874 I was surprised at the small number of cases of syphilis in the Lock Hospital of that city and at the very mild character of the disease, which was generally treated with a few inunctions. The medical officer informed me that the mildness of the disease was to be attributed to the very strict manner in which the police regulations and inspections were inforced. There were a few very bad cases in the hospital, but these had come from the interior of Russia, and had not been treated before admission. It is somewhat remarkable that syphilis is all but unknown in Iceland. It has been introduced over and over again into that country, but it has never made any progress and has never taken root. The condition of Iceland is explained by the simple lives and good moral behaviour of the inhabitants, and cannot be due to any special causes of immunity. It is rendered more remarkable from the fact that lepra is endemic in that island, and also in view of the prevalence of a severe and malignant form of syphilis in Northern Russia, the Baltic provinces, Finland, Sweden, and Norway. In our own country the disease is extremely prevalent—far more so, indeed, than is popularly supposed—and this prevalence is likely to become even more marked and decided in consequence of the free licence given to prostitutes to ply their trade in any public places they may select. England deservedly has the credit of preserving syphilis and pheasants better than any other country. The practical repeal of the Contagious Diseases Act, effected by a vote of the House of Commons, in servile obedience to the demands of an ignorant and fanatical section of the populace, has no doubt further aided the spread of syphilis. This subject will, however, be more fully referred to in the chapter on the prevention of the disease.

In the central countries of Europe, syphilis is more or less common in France, Germany, and Belgium, its prevalence in particular districts depending upon various social conditions, such as the crowding together of the population in large towns, and upon the number of military stations; it is also remarkably influenced by the means adopted for preventing the spread of the disease. In Rome and Southern Italy the complaint is more frequent than in the north of that kingdom. It is said to be especially common among the Jews of Galicia, many patients suffering from plica Polonica exhibiting syphilitic ulcers on the scalp. Hereditary syphilis is also very common among the people. It is, as Lancereaux points out, extremely difficult to ascertain positively the relative frequency of syphilis in a given nation or locality. As a general rule, only a small proportion of those affected come under treatment in the various hospitals; some consult private practitioners, while a large number neglect the disease altogether or have recourse to the advice of charlatans. The records of military hospitals form the only reliable bases for statistics. In the English army the frequency of venereal disease may be gathered from the fact that before the repeal of the Act the annual admission per 1000 of strength for primary venereal sores varied from 123 in non-protected stations to 50 in stations where the Act was in force, and that a loss of service of more than eight days per man in the home army was occasioned by these complaints. In the French army the loss of service is less than four days per man. To gain any adequate notion of the amount of mischief inflicted by this scourge on the army alone, it would be necessary to ascertain how many men were invalided and died every year from lesions due to syphilis. The records of the post-mortem room at Netley Hospital show that marks of inveterate syphilis are often found in the bodies of men who die from *what are considered* other diseases. The complaint is less frequent in Belgium than in France, and in France than in England, and this difference depends entirely upon the means adopted to check the spread of the disorder.

In most Asiatic countries the disease has long been known and is still very prevalent. In India, the prevalence of venereal diseases among the troops was at one time much reduced by the adoption of preventive measures. Police regulations and surveillance have, unfortunately, been abandoned, with the result of a large increase of venereal disease. At the present time, syphilis is one of the chief causes of admission into the army hospitals; besides being a very prevalent disease of the native population. Syphilis is met with everywhere in China, but more especially in the larger cities and those near the coast. In some districts it would appear as though the majority of the inhabitants had suffered from syphilis, the symptoms of which, however, in the Chinese are not marked by extreme severity. A kind of general syphilisation is thought to have lessened the virulence of the infection. Europeans, however, contracting the disease from Chinese women often exhibit the more serious features of the disease. In Japan, where prostitution is extremely common, syphilis prevails extensively, though in a mild form. In the Indian Archipelago, more especially in the coast towns, syphilis is very prevalent and commits serious ravages on the native population. It has of late years been introduced into the Sandwich Islands, and has spread with great rapidity. The islanders used to speak of it as the "English disease."

From various parts of Africa we have accounts of the prevalence of syphilis. The central portion of Southern Africa, according to Dr. Livingstone, forms an exception to the general rule. Among the natives of pure blood of this part, syphilis gets well spontaneously, and is never persistent. All along the West coast the disease is extremely common, and prevails in a very severe form. In Southern Africa, and in the Mauritius and adjacent islands, syphilis is very prevalent and its course exceedingly acute and rapid. The same holds good of Madagascar, into which island the disease has been introduced in recent times. In Abyssinia the disease is endemic, though of a mild character. In Egypt its symptoms are well known, and are treated by the native doctors by sarsaparilla and vapour baths. In Nubia a mineral substance containing mercury is used with good effects. In Algeria the disease is common and very widely spread, especially since the French occupation. In some parts the peculiarly severe character of the cutaneous symptoms would appear to be a remarkable feature of the disease.

With regard to America, the question of that country being the birthplace of the disease has been already discussed. The general rule would appear to be that the frequency and prevalence of the disorder among the native population are in direct proportion to the facility for and intimacy of the relations between them and the European colonists. Even now syphilis is all but unknown among certain Indian tribes who have little or no intercourse with Europeans. In the United States the disease prevails much as it does in Europe; among the negroes it is common and severe. In Canada syphilis is endemic among certain native tribes; it is also very prevalent in Columbia and Russian North America. In Mexico the disease is said to be more common than in any other part of the world; Zeissl states that its occurrence is a topic of common conversation, and is alluded to as freely as an ordinary cold is with us. The frequency of indurated sores, the early appearance of the constitutional symptoms, and the intensity of the eruptive fever, are common features of the disease as it appears in Mexico. In the Antilles syphilis is said to be particularly rare, a remarkable fact, inasmuch as those islands were believed to be the cradle of the disease. Syphilis is also rare in many of the West Indian islands. Venereal diseases have never been very prevalent in Jamaica, Trinidad, and Barbadoes.

In South America, on the contrary, especially in Brazil, Chili, Peru, and the Argentine Republic, syphilis is very common and widely spread.

From the foregoing account of the geographical distribution of syphilis it would appear that scarcely any part of the world is exempt from the ravages of the disease, that its prevalence increases with the development of civilisation and the facilities for intercourse, and that the type of the disease varies in different localities. With regard to the causes of these variations some influence must be attributed to climate and race, while other factors, and among them excesses of all kinds, likewise co-operate to a greater or less extent. As a general rule the disease presents its worst features in large seaport towns, being aggravated, as we may suppose, by frequent and promiscuous intercourse, by excesses, exposure to cold and damp, want of cleanliness, recklessness as to consequences, and similar conditions, obviously prevalent in such localities. Not only does the virus transmitted through such individuals become more potent, but those who expose themselves to infection are less able to resist its noxious effects than others differently situated; and thus it is that in such localities the severest consequences of the disease are frequently manifested in those who are the subjects of it. To this must be added that individual differences exist; no person, free from syphilis, is proof against infection, but there is evidence that of two persons infected from the same source, one may suffer from the severer symptoms of the disease, while the other may be comparatively slightly affected. There is no reason for supposing that the epidemics of former centuries differed from the disease as at present seen, except in their intensity and the rapidity with which they spread, but these characteristics may be easily accounted for. Many of them were connected with prolonged campaigns, in which it is certain that all the conditions favourable for the rapid growth of the disease in its severest forms prevailed to the fullest extent. The influence of climate appears to be quite subordinate to that of the conditions above described, though it is probable that, *cæteris paribus*, the course of the disease is milder and more favourable in southern and temperate climates than in those characterised by either extreme of temperature. As the course of the disease is influenced by the state of the general health, any specially unfavourable climatic conditions would, in all probability, *pro tanto*, aggravate the symptoms of syphilis. The influence of preventive measures on the spread of the disease will be hereafter referred to.

CHAPTER III.

THE ORDINARY COURSE AND SYMPTOMS OF SYPHILIS.

Definition.—Syphilis is a chronic contagious disease, due to the action of a specific virus, which, having been locally introduced at any part of the skin or mucous membrane of a healthy person, gradually pervades the entire organism, producing various lesions in some or all the systems of the body in a more or less regular order. It is capable of being propagated to healthy (*i.e.*, non-syphilitic) individuals by inoculation with the secretions from the sores to which it gives rise, and also, to a great extent, of being transmitted to the offspring of those who are suffering from the disease.

Origin of the Term.—The etymological origin of the term syphilis is uncertain. Littré, in his "Dictionnaire de la langue Française," says that the word was invented by Fracastor in his Latin poem on the "Venereal Disease" (printed at Verona, 1530); it is not known whether he derived it from any other word. Fracastor's legend is that a herdsman of King Alkithous, by name Syphilus, was afflicted with this disease by Apollo, as a punishment for paying divine homage to the king instead of to the god. Some authors suggest that the word is derived from σῦς, a pig, and φιλέω, to love; others think that it comes from σίφλος, a contracted form of σιπαλός, impotent, or from σύν, with, and φιλέω. Whatever the source of the first syllable may be, it seems certain that the remainder of the term has its origin in the word *φιλέιν*. Fallopia says, "Hic vocavit syphila morbum istum, quia ex amore . . . . ut plurimum suboritur."

Before describing in detail the various manifestations of syphilis as they appear in the different organs of the body, a short description will be given of the ordinary course and symptoms of the disease.

The syphilitic poison having been brought into contact with an abraded surface of skin or mucous membrane, remains apparently latent for a period which varies greatly in different cases, but which may be taken, on an average, to be about four weeks. In artificial inoculation on the healthy skin, some redness is first observed, but this disappears, and no change can be detected until the above-mentioned interval has elapsed. A little red papule or nodule then makes its appearance, increases in size, undergoes exfoliation or superficial ulceration, or gradually becomes absorbed without any destruction of tissue. In ordinary syphilitic infection, however, it often happens that the poison is implanted upon an excoriated surface, and that the syphilitic virus is mixed with various irritating secretions. Under such circumstances the erosion remains, or develops into an ulcer which subsequently becomes indurated. Even without previous decided erosion, the admixture of irritative purulent matter—*e.g.*, from a soft sore—causes hyperæmia and swelling, and subsequent ulceration at the point of infection. Ulceration is, however, not a necessary symptom of the implantation of the syphilitic poison. The induration alone is characteristic of syphilis and is a sign of constitutional infection. Its size and extent are of no prognostic significance in reference to the further course of the disease. The induration having attained its acme remains stationary for an indefinite and often considerable period, and then very slowly disappears. Local complications are not infrequent, the most serious of these being phagedæna, which is believed by some to be almost invariably due to syphilis.

A few days after the induration has become developed, the superficial lymphatic glands in the immediate vicinity begin to enlarge and become hard to the touch. The swollen glands are scarcely, if at all, tender on pressure, and the skin covering them is unchanged in appearance. The enlargement takes place slowly; the tumours are round or oval, and more or less prominent according to their situation and the amount of adipose tissue by which they are surrounded. As a rule, several glands are thus affected. Suppuration rarely takes place; sometimes the lymphatic vessels between the induration and the glands become hard and swollen.

While these changes, apparently of a purely local character, are going on, the patient may for some time be unconscious of any change in his general health. In the majority of cases, however, soon after the glandular induration shows itself, more or less decided symptoms of constitutional disturbance make their appearance. The patient suffers from general *malaise*, with headache and pains in the limbs; there is frequently also at this stage a rise of temperature. Enlargement of the spleen can often be detected at this period; and in some cases this condition remains for an indefinite time, though it generally subsides under mercurial treatment. After these symptoms have lasted for a variable time, an eruption of spots or papules appears on the skin, or the throat becomes sore. With the setting-in of these latter symptoms, the "constitutional" stage of syphilis is said to have commenced.

It would therefore appear that there are two incubation-periods in the early stage of syphilis, the first extending from the period of infection to the development of the induration, and the second from the formation of the latter to the appearance of the symptoms on the skin or in the throat. It may be assumed that the development of the poison is resisted by the forces of the organism, which, however, are finally overcome. These periods of incubation are analogous to those of latency, often observed in the subsequent course of the disease. Virchow has advanced the view that the blood of syphilitic patients is infected by the virus only at intervals, that this latter circulates with the blood, and is deposited in the various tissues in which it gives rise to the local symptoms, such as exanthematous eruptions, gummata, etc. Virchow says that "if this assumption be correct, there is no syphilis unless there are symptoms. If all the latter be extinguished, the same may be affirmed of the syphilis." Virchow, however, allows that occasionally a part of the poison is retained in certain foci, especially in the lymphatic glands, whence it again reaches the circulation, and becomes the starting-point for a new self-infection and new symptoms. "There is no evidence," says Virchow, "that in syphilis the infection is continuous; on the other hand, all its history compels us to assume an eruption of new disorders by fits and starts, an intermittent infection from certain foci."

There are, however, as Zeissl pointed out, several objections to this theory. It fails to explain the cases in which an individual in whom syphilis is latent—that is, who presents no symptoms except, perhaps, slight glandular enlargement—is able to infect other persons. This is seen in the case of a wet-nurse who shows no other signs of syphilis than some amount of pallor of the skin and glandular induration, but who nevertheless communicates syphilis to the child she suckles. It fails also to meet the case of the man who exhibits no symptoms, but nevertheless infects his wife and the child to which she gives birth. These and other considerations appear to be fatal to Virchow's theory, and it would rather appear that the virus of syphilis effects some *persistent* alteration in the blood, the nature of the change being as undiscoverable when the symptoms are latent as when they are present in the most marked degree. It is probable that the lymphatic system is the first to be affected, and that the poison reaches the blood through the lymphatics; but we cannot suppose that these latter and their glands are the main foci of the disease, keeping in view the constant communication which takes place between the blood and the glands, and the manner in which the corpuscles of the latter structures are poured into the blood-vessels. It may, therefore, be affirmed that the blood is infected long before any cutaneous manifestation appears, and that the infection is continuous in spite of the absence of that or any other symptom.

To revert, however, to the local manifestations on the skin and mucous membrane. The most common and the mildest form of eruption is a roseolar rash, which usually shows itself about eight weeks after infection. Its development may be impeded by treatment (mercurials for the induration), and accelerated by excesses of various kinds. At this period the patient, *as a general rule*, is exempt from syphilitic affections of the bones, rupia, and tubercular or gummatous formations in various parts. Cases, however, sometimes occur in which the common order of sequence is not observed, and there are no so-called secondary phenomena, the complaint passing at once into the third stage, as evidenced by rupia, gummata, etc. A description of these cases will be found in the chapter on malignant syphilis.

The milder forms of cutaneous eruption are generally of short duration, and rapidly subside either with or without treatment. The papular forms are more severe, and are often accompanied by papular growths on mucous membranes, and at places where the skin and mucous membranes join. These flat condylomata are essentially papules of the mucous membrane, and resemble in structure the papules of the skin, but are modified by the nature of the base from which they spring and its surroundings. The papular eruptions are often extremely obstinate; they are liable to become ulcerated, and fresh outbreaks and relapses are very frequent. They may continue to show themselves for several months, and simultaneously with these, the patients generally notice that their hair becomes very thin, that their nails become dry, brittle, and otherwise changed, and that the shin-bones and the clavicles are very tender and painful, especially at night. Certain affections of the eyes, such as iritis and retinitis, are prone to occur at this period.

While these symptoms are manifesting themselves, all the lymphatic glands accessible to observation will be found to be enlarged and indurated. This change first occurs, as mentioned above, in those glands which are nearest to the point of infection, but it gradually spreads to all the glands in the body. The enlargement keeps pace with the other symptoms, being more marked when any exacerbation takes place in the latter. The glands which are most conspicuously affected are those in the neck, at the posterior border of the sterno-mastoid muscle and beneath the occiput, the submaxillary, the inguinal, and the axillary glands. The inguinal glands being the nearest to the ordinary point of infection, are generally those which are first affected. The enlargement extends to the glands situated internally—*e.g.*, the bronchial and pelvic glands. Suppuration rarely occurs unless the patient be of a decidedly scrofulous habit. In this case the glands may attain an enormous size, become painful, and finally suppurate. Examples of this kind are seen in the neck in scrofulous patients suffering from pustular syphilitic eruptions. In the majority of cases, however, the glandular enlargement pursues a chronic course, being the most invariable and permanent symptom of constitutional syphilis. It can often be detected many years after the disease was first contracted.

The changes just described constitute what are termed the secondary symptoms of syphilis. They are characterised, for the most part, by the rapidity of their development, by their comparatively mild and superficial nature, and by the promptness with which they subside under suitable treatment. They are also characterised by a tendency to a general and symmetrical development, whereas the tertiary lesions are of a more local, restricted, and unsymmetrical character. The classification is convenient, but no sharp line of distinction can be drawn between the secondary symptoms and those which come after them. Certain lesions, such as sarcocele, would occupy a kind of intermediate position, as they do not belong to the earliest symptoms, and yet precede, as a general rule, the later manifestations, such as severe diseases of the bones and disease of internal organs.

Affections of the eye belong to both periods. Thus in the secondary stage, iritis, retinitis, and choroiditis are observed. These affections show a great tendency to relapse, and, as time goes on, gummatous growths sometimes appear in the iris and choroid. The classification is, however, useful, because in many cases no other symptoms make their appearance. Relapses may occur, proving that the complaint is not altogether eradicated, but the recurrences appear as purely local lesions, differing in no way, save by their mildness, from those that have gone before. Thus new crops of eruptions may appear on the skin and mucous membrane, fresh attacks of angina, or of iritis, may supervene, and the glandular swellings and indurations may become more prominent from time to time. It not infrequently happens, however, that these recurrences are of a much more serious character, and are accompanied by general symptoms similar to those which were associated with the first appearance of the eruption or the angina.

In tracing the further course of syphilis there are numerous variations to be noticed. These differences are connected with the intensity of the lesions and symptoms, and often, it would appear, with some peculiarities, so to speak, of the soil in which the poisonous germ is sown, and are due to several causes. It is a well-known fact that, even apart from any differences of treatment, the course of syphilis is greatly influenced by the age, habits, and surroundings of the patient, and by the state of his general health. With regard to age, syphilis, *cæteris paribus*, is a much more serious disease in a man over forty years of age than in one who has not reached that period, and the general gravity of the disease increases with advancing years. In elderly patients the evolution of syphilis is more rapid than in younger ones, the tertiary stage is much sooner reached. The secondary eruptions soon become decidedly pustular, but this stage is cut short, for in less than a year after infection gummatous growths may become developed in the skin and elsewhere, and these undergo rapid disintegration and suppuration. The type of the disease, therefore, varies considerably from that usually observed. The period of incubation has been noticed to be short in old people. Relapses of the tertiary cutaneous ulcerations are very frequent. A patient who contracts syphilis after forty rarely, if ever, gets rid of it, and the prognosis is unfavourable as regards the effects on the system in general. The symptoms are aggravated by excesses of all kinds, but *especially by excess in alcohol*, by exposure, and in fact by all conditions which tend to depress the system generally. A previous condition of bad health tends to influence the course of the disease in an unfavourable manner; and there are also individual peculiarities, some persons being much more seriously affected than others, in the absence of any obvious cause for the difference. There is another remarkable characteristic of syphilis, well seen in some cases, and that is, the appearance of the symptoms, under certain conditions, after a long period of latency. A patient may have been free from symptoms for several years when after exposure to cold, or indulgence in excess, or after a period of impaired health owing to reduced circumstances, the disease reappears in a much more serious form than before. Instead of papules we find pustules of varying size, some of which become converted into troublesome ulcers. A frequent concomitant is a severe form of throat-affection, an ulceration which tends to spread and to cause considerable destruction of tissue. These symptoms are attended by fever and other evidences of constitutional disturbance. The nasal cavities may be similarly affected; the mucous membrane is destroyed by ulceration, and the process extends to the cartilages and bones of the nose. In no part of the body are the symptoms of syphilis more marked, or the result more destructive in certain cases. The bones generally, but especially those of the skull, the clavicle, and the tibia are at the same time often the seat of painful swellings.

There is yet, from a pathological point of view, another and a very important stage in the course of syphilis, and this is characterised by the formation of certain peculiar local growths, termed gummatous tumours or gummata. These may occur in any organ of the body, and may be either diffused or distinctly circumscribed. They are seen in their most perfect condition in the liver, where their colour distinguishes them from the structures in which they are embedded; but the skin, mucous membranes, the bones, the brain, and all the internal organs, may be the seat of these new formations. They are for the most part peculiar to the later stages of syphilis, and they differ from the more superficial lesions of the earlier stages in exhibiting a slowness of evolution, a power of extension to all parts of the body, and a very decided tendency towards disintegration and molecular necrosis rather than towards spontaneous absorption and disappearance. Some believe that gummata are purely local formations and are developed from deposits left over from the stage of exanthematous eruption. In the more superficial parts, viz., in the skin and subcutaneous cellular tissue, the disintegration of the gummata often gives rise to ulceration of a very destructive character and tending to involve the adjacent parts. These ulcers sometimes take a serpiginous course, extending in one or more directions, while cicatrisation is going on at the spot where the ulcerating process commenced. When these formations take place in internal organs, they often give rise to very serious symptoms. Cerebral lesions, of a fatal character, are often due to the development of gummata. Similar formations in the bones and periosteum are frequent causes of extensive caries and necrosis, which in their turn set up a marked condition of cachexia, associated with amyloid degeneration of many internal organs, and especially of the kidneys. A new train of symptoms is then presented. The urine becomes albuminous, and contains hyaline casts; dropsy sooner or later supervenes, and death eventually takes place with symptoms of uræmia. In other cases, the lungs are the organs mainly affected in the last stages of severe syphilis, and death takes place with symptoms resembling those of consumption. Death may also follow from gummata in the heart or in the liver, and in some cases scarcely any important organ escapes being invaded by these growths. All these manifestations occur, as a general rule, at a late period of the disease, seldom at a less interval than two years from the date of the primary infection, though in some exceptionally severe cases they show themselves at a much earlier period. I have seen several instances in which rupial ulceration took place within the first six months of infection, and was soon followed by cerebral symptoms. I have reason to believe that this association of symptoms is by no means rare, and my experience would lead me to give an unfavourable prognosis, *quoad* the setting-in of cerebral symptoms, in cases in which superficial gummata, with severe ulceration, appeared within the first year after infection.

The development of gummata may be said to constitute the last stage in the course of the disease, and this stage, in many cases, passes through three phases before it attains its completion. In the first of these the growths are developed in the more superficial parts, as the skin and the subcutaneous connective tissue; in the second, the tendons, muscles, bones, and the fibrous tissues are affected; while in the third, the viscera are the principal seat of the lesions. It must not be inferred, however, that this order of sequence is always adhered to; on the contrary, the fibrous tissues and the bones are often first affected, and the viscera are next invaded by the growths. The term "tertiary" was adopted by Ricord to designate affections of the bones and fibrous tissues and of the internal organs. This "tertiary" stage is called by Lancereaux the "period of gummatous products," the "secondary" stage being styled by the same author the "period of general eruption." This latter is described by Zeissl as "the stage of moist papules." He adopts Lancereaux's term for the tertiary stage.

There is another important difference between the secondary and the tertiary lesions of syphilis as regards the inoculability of the secretions from ulcers or sores. The secretions of condylomata and of ulcerative throat affections are well known to be inoculable, but it does not appear that the secretions or discharges from gummatous growths are possessed of a similar property. A question closely akin to this refers to the hereditary transmissibility of the disease when in the tertiary stage. This question will be discussed in the chapter on hereditary syphilis.

The principal stages in the course of the disease may be therefore stated as follows:

1. The stage of incubation.
2. The local affection or primary sore.
3. The stage of glandular enlargement and of general eruption, or period of secondary affections.
4. The stage of gummatous formations and ulcerations, or stage of tertiary affections.

Syphilis has been compared with the exanthemata, and in some respects the comparison holds good, but it must not be pushed too far. The secondary period corresponds with the eruptive stage of the infectious fevers, and the tertiary period to the sequelæ sometimes observed, and which, though no essential part of the primary disease, are due for the most part to the weakened condition of the organs implicated and to the impure state of the blood induced by the poison which gave rise to the fever. In the exanthematic fevers, however, the poison is rapidly eliminated, and after a definite time the patient is free from all germs of the disease, the only difference being that, as a general rule, his system is no longer susceptible of being influenced by exposure to the particular fever poison. In syphilis the elimination is a much more gradual process, having no limit as regards time, and in many cases never being completed. Relapses are, moreover, frequently observed, and there is another great difference between syphilis and infectious fevers, in that the course of the former is *indubitably influenced by treatment*, whereas no claim of the kind can be made for medicines in the case of the ordinary exanthemata.

The possibility of recovery from syphilis, disputed by many, cannot be denied, and by recovery is meant not merely the disappearance of this or that symptom, but the real cessation of the disease, consequent upon the destruction and elimination of the poison. As stated above, it is impossible to determine the duration of syphilis; in some cases, after a few months, the patient remains free from any trace of the disease for the remainder of his life; in others, the same result is not attained until years have elapsed. Proof that the poison can be totally eliminated is found in the fact that reinfection occurs in not a very small proportion of cases. Examples of this will be described in a subsequent chapter, and they show that syphilis does not differ from other constitutional diseases which can be eradicated by the combined influences of time, hygiene, and treatment.

It is difficult to form any estimate of the mortality due to syphilis, but it is doubtless much higher than is commonly supposed. The disease is often the real cause of many affections which at last terminate fatally, and in many cases its presence gives a fatal turn to disorders, which they would otherwise have escaped (see page 15). Syphilis, however, may be the immediate cause of death, as in cases where gangrene or sloughing attacks syphilitic sores, or where necrosis of the cranial bones causes perforation of a venous sinus, or where syphilitic laryngeal disease produces suffocation, or where disease of the cerebral arteries or a gummatous growth is the cause of fatal coma. It far more commonly happens, however, that syphilis gives rise to chronic visceral lesions which interfere with the functions of important organs, and set up a condition of cachexia which ultimately proves fatal. Zeissl states that in one year in the Vienna General Hospital there were 1097 patients treated for constitutional syphilis, 667 men and 430 women. Of these, six men and two women died; the mortality was therefore ·7 per cent. The causes of death were pulmonary tuberculosis and renal disease, and, in the case of one woman, septic perimetritis. The mortality in subsequent years was found to approximate very closely to the above figures. My experience is in accordance with that of Lancereaux, who states that even in the absence of any epidemic, visceral syphilis is frequently complicated with erysipelas, often of a serious and even fatal kind. In like manner the subjects of visceral syphilis are especially liable to pneumonia of an insidious character. It is well to bear in mind Lancereaux's advice that whenever one or other of these affections occurs in a patient who is enfeebled and cachectic without obvious cause, the physician should bear in mind the possible existence of visceral syphilis.

CHAPTER IV.

THE NATURE AND CAUSE OF SYPHILIS.

It was stated at the conclusion of the first chapter that the separation by Bassereau, in 1852, of primary venereal sores into two classes, named respectively the hard and the soft, formed an important landmark in the history of syphilis, and a starting-point for several theories with regard to its nature. Before this time it was pretty generally supposed, that all venereal sores were due to the action of a single virus of an unknown nature, but the fact had not escaped observation that while in some cases the sores were followed by more or less severe constitutional symptoms, in others no such results could be detected, the local ulcer constituting the whole of the complaint. The difference in the appearances of the two sores was supposed to be due to difference in the virulence of the poison and to peculiarities in the system in which the virus had become implanted.

Bassereau's theory was based mainly upon the "confrontation" of persons suffering from venereal sores with those from whom they had contracted them. From an examination of hundreds of cases, he was able to prove, to his own satisfaction, that the hard sore always produced a similar lesion, and that the same held good of the soft sore—*i.e.*, that each possessed only the power of producing its like. He also established the difference between the sores, as regards liability to be followed by constitutional symptoms. He further observed that the soft sore was frequently accompanied by inflammation and suppuration of the nearest lymphatic glands, whereas the hard sore caused the glands in the neighbourhood to become swollen and hard, but very rarely to suppurate.

These views were further developed by Rollet, of Lyons, who endeavoured to bring them into harmony with certain clinical facts. It was well known that by repeated inoculations the soft sore could be reproduced almost *ad infinitum* upon the bearer of it, and upon all other persons, whether syphilitic or not. It was also known that the secretion from the hard sore was inoculable upon all non-syphilitic individuals. It had been likewise discovered that this latter secretion could not be inoculated successfully upon the person from whom it was taken or upon any other individual already syphilitic. If, however, several hard sores appeared simultaneously on the same patient, it was assumed that these were due to simultaneous inoculation at more points than one, and were not the results of successive infections from an original focus. It was subsequently discovered that the secretion from the hard sore could sometimes be inoculated upon the bearer, but that the resulting lesion did not resemble the parent one, but was similar in all respects to a soft sore. Bassereau had not attempted to explain the cause of the difference between the two sores, or to assume the existence of a specific virus for the local sore. He simply stated that he was constrained to admit a different cause for the local and constitutional diseases. Rollet, on the other hand, asserted that the soft sore possesses a *distinct virus* of its own, differing entirely from that of the hard sore. His doctrines, on these points, constitute what is termed the *Duality Theory.*

These views, however, of Rollet, appeared to be contradicted by the results of inoculating the secretions of a hard sore upon the bearer. As stated above, ulcers were produced, without any period of incubation, exactly resembling soft sores in appearance, and repeatedly inoculable upon the patient and other persons. These experiments seemed to establish the identity of the secretions of the two sores, and consequently to upset the *Duality* theory. To meet these objections, a new theory was devised, according to which a mixed character was imputed to certain sores—that is to say, they were supposed to contain the specific poisonous properties of both classes of sores. This theory, however, could not be maintained in face of the manifold experiments which were constantly being made. It was demonstrated over and over again that the secretion of the hard sore, after it had been irritated, could be inoculated on the bearer and produced soft ulcers, and it was impossible to assume that the supposed "specific poison" of the soft sore was present in all these cases and controlling the results. The doctrine of "duality" and that of the "mixed chancre" seemed, therefore, perfectly untenable. Another theory was to the effect that the soft sore was the product of a hard sore inoculated upon a person already syphilitic, that it had permanently lost its infective properties, and could be transmitted as a soft sore to a healthy person and not cause general infection. This theory was invented by Clerc; he used the term *chancroid* to designate the soft sore, which he regarded as the hybrid of syphilis.

An extensive series of experiments was performed in 1853 by Danielssen, of Bergen. His patients were lepers, and his idea was that, inasmuch as there is a probable connection between leprosy and syphilis, it might be possible to cure the former by inducing an attack of the latter disease. He inoculated twenty-seven lepers, none of whom had suffered from syphilis, with pus from suppurating chancres. The inoculations were continued for many months, but not one of the patients showed any sign of constitutional infection. In order to prevent the conclusion that lepers are not liable to constitutional syphilis, Danielssen afterwards inoculated one of the above-mentioned patients with matter from a hard sore. In three days a characteristic pustule became developed, and the inoculations were continued with the pus which this yielded. Only a few small pustules, however, were produced. Nearly two months afterwards one of the scars, the results of the previous inoculation, broke open and an ulcer formed, which yielded a thin and scanty secretion. The parts around were red, hard, and somewhat tender, and the inguinal glands on the same side became hard and swollen. The ulcer healed, leaving a somewhat hard cicatrix. Rather more than three months after the inoculation, constitutional symptoms became developed. These experiments appear to prove that both the hard and the soft chancres propagate themselves after their kind, and that the general infection is not to be attributed to any peculiar predisposition, or to diathetic or other conditions.

With regard to the secondary manifestations of syphilis, Hunter, as is well known, denied that they possessed contagious properties. He also asserted that the disease was not hereditarily transmissible. Ricord also for some time denied the contagious properties of discharges from secondary sores, relying upon experiments performed upon diseased persons; but he afterwards retracted this view, and assisted in establishing the contagious nature of secondary lesions. He also fully assented to Bassereau's theory of two kinds of ulcers representing two perfectly separate and distinct diseases. Rollet had pointed out that the sores obtained by inoculating the discharges of secondary syphilitic eruptions were invariably hard.

At the present day there are two principal theories with regard to the relations existing between the hard and the soft sores. These may briefly be described as the Unity Theory and the Duality Theory, and it is desirable to examine them somewhat closely. The UNITY THEORY teaches that the hard and the soft sore are the products of one and the same virus; it admits that the infective property (constitutionally) of the soft chancre is perhaps less than that of the hard sore, but claims that the former may, and frequently does, produce constitutional effects under favourable circumstances and on a suitable soil, and that the modification of the results may be due to the nature of the local process which is induced. It further asserts that it is unsafe to predict that even a soft chancre with a suppurating bubo will not be followed by constitutional symptoms.

Kaposi, of Vienna, a prominent advocate of the Unity Theory, admits that it fails to explain, or explains imperfectly, many facts connected with syphilis. At the same time he claims that the number of its adherents is increasing, and cites the following facts, which are admitted as valid by both schools, and are based upon experiments and clinical observations.

1. The soft chancre, with or without suppurating bubo, ends generally as a local disease, and is not

usually followed by constitutional disorder of any kind.

2. The same kind of chancre, with or without suppurating bubo, is sometimes followed by constitutional syphilis.

3. The soft chancre may begin as such, but may become indurated in its subsequent course, and is followed by general syphilis.

4. The hard chancre begins, in the majority of cases, like the soft one (as a pustule, without incubation); the induration becomes developed in the course of the second or third week, but sometimes earlier, even before the end of the first week. This, as a general rule, is followed by constitutional syphilis.

5. The chancre exhibits typical induration, but in very rare, though well-authenticated cases, is not followed by constitutional syphilis.

6. If the typical sclerosis be removed at an early period by excision or other method, in numerous instances, though not in all, the patients will escape constitutional manifestations. This fact, like that adduced in the previous paragraph, contradicts the Dualist view to the effect that induration is a symptom of general infection. (As will be seen hereafter, there is reason to doubt the correctness of this statement. We believe that the induration is a sign of constitutional infection.)

7. Soft chancres and pustules may pass into characteristic papules *in sitû*. The number of these may keep on increasing by auto-inoculation, as the chancre itself, as a local affection. After an interval of from six weeks to three months, roseola appears as a manifestation of general infection, and this is followed by a series of constitutional syphilitic symptoms.

8. Several indurations may occur simultaneously on one individual, or may become successively developed.

9. The purulent secretion obtained by artificially irritating Hunter's nodules and papules, or from the same lesions in a state of spontaneous suppuration, produces ulcers on inoculation, and these are repeatedly inoculable and correspond therefore in this respect with the general notion of a soft chancre.

10. The inoculation upon a healthy subject of the secretion from a soft sore (resulting from the inoculation of a hard sore upon the patient or upon another syphilitic subject), is not invariably followed by constitutional syphilis.

11. The artificial inoculations of the secretions of secondary syphilitic products, or of the blood of syphilitic patients, have shown that in these cases the primary effect develops itself for the most part, not in the form of a chancre or of the Hunterian induration, but in the form of a nodule resembling a papule in which the characters of sclerosis are absent.

12. Clinical experience also teaches that, in numberless cases, constitutional syphilis is directly conveyed in the form only of papules, the so-called broad condylomata, without sclerosis or a form of chancre as a primary effect.

13. In addition to this, constitutional syphilis very often follows primary affections, which correspond to the characters neither of the typical soft sore, of the typical hard one, of the sclerosis, nor to those of the papule, but appear as phagedænic or diphtheritic ulcers, or even as mere erosions. Thus, then, the dogma that all syphilis has an indurated chancre, or a sclerosis, or a papule, as its initial form is contradicted.

14. Finally, well-authenticated cases occur in which syphilis is acquired without any trace of what may be called a primary affection, there being no visible formation of ulcer or papule at the spot where the contagion is introduced—*Syphilis d'emblée.*

The Duality Theory teaches that there are two varieties of chancres, the soft and the hard. The former of these runs an acute course, its edges and base are soft, or, at all events, non-indurated, and its effects are local only—that is, it does not contaminate the system. The latter is chronic in its course, has indurated edges and base, and is invariably followed by symptoms of constitutional infection.

The facts upon which this theory is based may be thus briefly recapitulated. Inoculation with the pus of a soft venereal ulcer gives rise to a pustule, and after three or four days to a characteristic ulcer. Inoculation with the secretion from a hard venereal sore produces an induration which makes its appearance during the third or fourth week or even later. The infecting chancre has therefore a much longer period of incubation than the soft sore, the ulcer of the former kind is less excavated, its secretion is less abundant and thinner in character; ulceration is, indeed, often absent, a subcutaneous indurated nodule being the first manifestation. The hard chancre occurs on the human subject only, not in animals; these latter can be successfully inoculated with the secretions of the soft sore. The soft chancre may run its course without the formation of a bubo, the hard chancre is always associated with swelling and induration of several lymphatic glands. If glandular swelling occurs in connection with a soft chancre, suppuration frequently takes place, and the pus, if inoculated, produces a simple ulcer. The soft chancre may be repeatedly inoculated upon the subject of it; whilst the secretion from an unirritated hard sore cannot be reproduced by auto-inoculation. As mentioned above, the indurated sore, after irritation, yields a secretion inoculable upon the bearer and other syphilitic individuals, and producing a sore exactly resembling a soft chancre. The buboes associated with the hard sore very rarely suppurate, and when suppuration does occur inoculation with the pus so formed does not invariably produce any form of sore. The infecting sore occurs for the most part as a solitary lesion, or if more than one be present, the number is always very small, and they are all mature at the same time; on the other hand, there is no limit to the number of soft sores which may be found in the same patient. The poison of the infective chancre is connected with débris of tissue, the blood, and the secretions from the secondary eruptions. Finger, however, states that the virus is not present in the blood during the intermediate periods of the outbreaks of the secondary eruptions. As a parallel, may be quoted the absence of the spirillum from the blood in the latent stages of relapsing fever. The virus of the soft sore is contained only in the pus or in the débris of the ulcer. Inoculation with the secretion of a hard sore upon healthy subjects has invariably given rise to the development of a similar lesion and of no other. Daniellsen and Boeck inoculated lepers with the pus of simple venereal ulcers, and the patients showed no symptoms of general syphilis; they then used the secretion of a hard chancre and general syphilis followed.

One objection to the Duality Theory is supposed to be constituted by the fact that an ulcer often exhibits all the characteristics of a soft sore for many days or even weeks, and becomes indurated later on, and is followed by constitutional symptoms. Such an occurrence, however, may be explained in one of three ways. (1) A patient suffering from secondary syphilis, but whose genital organs are free from obvious lesion, contracts a soft sore; this can be inoculated as such upon the bearer or upon a healthy individual. If, however, the secretion from such a sore contain an admixture of the patient's blood, and be then inoculated on a healthy subject, the result will be the production of a hard sore and its consequences. (2) A soft sore may occur in close proximity to an infecting one, and the two secretions may become blended. The result of inoculation upon a healthy subject in such a case may be either a hard or a soft sore, or the latter followed by the former. (3) Under the circumstances mentioned above, a patient is inoculated with the mixed secretions and the result is a compound one. After a brief incubation, perhaps on the third day, a pustule with an ulcerated base—*i.e.*, a soft sore—forms on the skin. After an interval of three or more weeks induration appears, and the sore is then a hard one; or, in other cases, the cicatrix becomes indurated after the sore has healed. These explanations are supported by many observations in regard to vaccination. If the vaccine-lymph, taken from a syphilitic child, be free from admixture of blood, the vaccine vesicle runs its course in the ordinary way and no ill results follow; but if such admixture be present, the vesicle becomes developed, and after it has run its course, induration appears in its base, and is followed by general symptoms. This process is exactly analogous to that seen in the case of a soft sore, which, some time after its appearance, exhibits signs of induration.

Other objections to the Duality Theory are, that syphilis sometimes occurs without previous or coexistent induration of the cicatrix; it has been also noticed that a woman may infect several men, and give one a hard and the other a soft chancre. This can be explained by the fact that the woman is suffering from soft chancres as well as from syphilis, and those infected with the soft sores only are immune to syphilis from some cause, such as previous syphilisation. It is doubtless a great mistake to advocate a single symptom as being pathognomonic of a disease, yet this is frequently done with regard to syphilis. Even at the present time there are many who cling to the single symptom of induration with the idea that the whole doctrine of the Duality Theory depends upon it, and that an indurated sore and the primary lesion must be necessarily synonymous terms, forgetting that this induration is only a symptom of the initial lesion, that it may be very much modified by local circumstances both as regards its intensity and extent. Besides this, it not infrequently happens that an individual who has exhibited induration several years previously again contracts an infecting chancre. This, however, only proves that a patient may become cured of syphilis, and that a second infection is possible, as will be fully described in a subsequent chapter. There is no clinically characteristic sign whereby a so-called tertiary syphilitic ulcer can be distinguished from a soft chancre; there are forms of the soft ulcers and of papules which exactly resemble each other. Cases occur in which the hard sore is not followed by general syphilis; several hard chancres are sometimes found on the same individual; syphilis may be conveyed to an individual without the development of any local affection being detected (*Syphilis d'emblée*). The hardness of the ulcer is not an exclusive attribute of the infecting chancre, there must be at the same time firm nodular induration of the lymphatic glands.

The supporters of the Unity Theory regard every chancre, whether its base be hard or soft, as connected with syphilis. According to this view, the pus of a soft chancre represents a concentrated poison giving rise to a more acute process, which, by the destruction it sets up, prevents general infection, whereas the secretion of the hard chancre produces a chronic poisoning of the blood, the effects of which are gradually and slowly developed.

The supporters, however, of the Duality Theory allow that sometimes (but only in exceptional cases) soft sores are followed by constitutional syphilis. But in these cases the explanation is that there has been an accidental blending of the two diseases, viz., syphilis and soft chancre, and that the soft sore has simply been the means of conveying the syphilitic virus, and has not itself given rise to the constitutional affection. In addition to this, there is the possibility in such cases that papules may exist under the ulcer and the syphilis may be due to them, while they have no effect upon the condition of the floor of the ulcer, and accordingly there is no feeling of induration communicated to the finger. The advocates of the Duality Theory admit that inoculations, upon the subject of it, with the secretions of an irritated hard chancre give rise to a lesion similar to the soft chancre, and that if a healthy—*i.e.*, a non-syphilitic—person be inoculated from the lesion so produced, a hard chancre may be the result.

If a short *résumé* be made of the present position of the Unity and Duality theories, it will appear that the adherents of both views are agreed that the course of the hard chancre is different from that of the soft one, and that, with a few exceptions, the former is followed by constitutional syphilis; they also agree that the soft chancre, as a general rule, remains a local affection, that at the worst it leads to suppuration of the inguinal glands, and that, without any previous induration of its base, it may be followed by constitutional syphilis, but that such a result is extremely rare. It is, however, assumed by the advocates of the unity of the contagia that the soft chancre gives rise to the infection by virtue of the poison lodged within it, whereas the advocates of the duality allow that the sore is only a channel through which the general infection may take place.

In addition to these two theories there is a third, which, in the opinion of the author, satisfactorily accounts for the differences between the two classes of sores. It may be laid down as an axiom that the secretions of the hard sore contain a specific virus, capable of producing definite effects when inoculated upon non-syphilitic individuals. On the other hand, it may be asked, Is there any *peculiar virus* in the secretions of the soft sore? and Is a sore of this character *necessarily connected* with venereal disease? The answer to these questions must be in the negative, inasmuch as experiments have proved that ulcers exactly resembling soft sores can be produced on non-syphilitic individuals by the inoculation of non-specific pus.

The first experiments of this kind were made by Prof. Pick in 1865. He inoculated syphilitic subjects with the pus from non-venereal pustules (scabies, acne, and pemphigus) and produced pustules and soft sores inoculable through several generations.* Inoculations upon the patients from whom the pus was taken and upon healthy persons produced no effect. It was considered that the effect produced depended upon the increased vulnerability of the syphilitic subjects; that is to say, these latter were supposed to possess a peculiar aptitude for the development of cutaneous inflammation and ulceration. Further experiments have, however, proved that similar inoculations on non-syphilitic subjects may be followed by ulcers resembling soft sores. The theory of the

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* Zeissl: "Lehrbuch der Syphilis," Vierter Aufl., S. 202.

"increased vulnerability" of syphilitic subjects is therefore unnecessary to account for the phenomena.

Some experiments performed in Vienna by Dr. Wigglesworth, of Boston, U.S., clearly show that the inoculation of non-specific pus may, under favourable circumstances, give rise to local ulcers, closely resembling soft sores, and re-inoculable in generations, and that this pus need not come from a syphilitic person, or be inoculated on a syphilitic person, in order to produce these effects. It is, however, probable that the effects would be more marked if the pus were taken from or inoculated upon a person enfeebled by any such disease as syphilis.

Dr. Wigglesworth's experiments were performed upon himself. He was free, he states, from all disease, either hereditary or acquired, but was in somewhat feeble health owing to overwork in the hospital. He took pus from an acne pustule upon himself and inoculated three spots on the anterior aspect of his left forearm. The result, in three or four days, was three well-marked pustules. From each of these he inoculated one new spot upon the same arm nearer the wrist, and produced three new well-marked pustules. From each of the three second series he again inoculated fresh spots, still nearer the wrist, and with the same results. The second series was hardly as well marked as the first, and the third series was slightly inferior in vigour to the second, still all were well marked, the nine sores being at the same time present on his arm. On removal of the crusts, perceptible ulceration of the skin was found to exist. Zeissl, with whom he was studying at the time (1867-68), happened to be lecturing upon Dualism, and requested him to show his arm to the class to prove the production of ulceration from properly inoculated, simple, healthy pus. There were no buboes in his case, nor did the ulceration require other treatment than exclusion from the air by means of a simple dressing and cleanliness. The scars remain to the present day.*

Kaposi and many others likewise have performed experiments of the same nature, and which point to the same conclusion. Dr. R. W. Taylor describes a case of a syphilitic man who contracted gonorrhœa and subsequently developed herpes vesicles, which in a few days were converted into typical chancroidal ulcers. The secretions from these latter were inoculated upon the patient's abdomen, when a characteristic chancroid was developed. Other sores of the same character made their appearance on his left thigh in consequence of his careless and dirty habits, and finally intercourse with his wife resulted in her having several chancroids and suppurating buboes.

It would therefore appear certain that *the inoculation of the products of inflammation will often produce a sore identical in kind with soft ulcers*, the result of impure sexual intercourse, and this being allowed, it may well be asked what reason is there for assuming the existence of a virus, *having specific characters*, as requisite for the production of a soft sore? Why should it not arise *de novo*, and without the intervention of the syphilitic virus? It must also be borne in mind that the infecting source often contains an admixture of many secretions, and it is not to be expected that ulcerative lesions, the result of sexual intercourse, should invariably preserve and exhibit the pure and simple characters to be found in sores produced by experimental inoculations. The vagina often contains morbid secretions from its own mucous membrane and from that of the uterus, and it is easy to conceive that these secretions, inoculated upon the male organ, should be able to give rise to inflammation and ulceration without any syphilitic virus being present. In point of fact, Morgan, Beck, and Rieger have proved that the secretion from purulent vaginitis will, if inoculated into syphilitic individuals, produce sores exactly resembling soft chancres. In this way, therefore, *the soft sore is separated altogether from syphilis.* The case was similar some years ago with regard to gonorrhœa. Formerly believed to be identical with syphilis, it is now known to have nothing to do with that complaint, and not infrequently to originate *de novo*, *i.e.*, independently of direct contagion.

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* Bumstead and Taylor: "Pathology and Treatment of Venereal Diseases," p. 29; Zeissl, "Lehrbuch der Syphilis," S. 204.

The author's views with regard to syphilis and its relation to the soft venereal ulcer may be thus formulated :—

1. The disease known as syphilis is due to the action of a specific virus, a pathological agent, separate and distinct from every other animal poison, and never originating *de novo.*

2. The soft venereal ulcer (pseudo-syphilis) is due to the action of irritating secretions, which, so far from being identical with the poison of syphilis, are altogether different and distinct from it. Such an ulcer may, and frequently does, arise *de novo* from inoculation of the products of inflammation, and may then be transmitted from one individual to another.

3. The virus of syphilis may be commingled with the secretions of a pseudo-syphilitic or non-specific sore, or with secretions which by themselves would cause such a sore. In either case the resulting ulceration will possess double properties, evidences of which will be sooner or later exhibited.

With regard to the *nature* of the syphilitic virus, it must be confessed that in spite of a large amount of research we are not yet in a position to speak at all definitely on the subject. Syphilis belongs to the class of diseases known as "chronic infective granulomata." The characters of this class are: Inoculability and commencement by a well-marked local lesion from which the general infection spreads. In many diseases of this class the activity of the virus is retained for a very considerable period; and in certain stages lesions may be produced, which are of a local rather than of a general character.

This class includes besides syphilis, tuberculosis, glanders, and leprosy, and, as micro-organisms have been demonstrated to be always present in the lesions of all these diseases, excepting syphilis, and to be the cause of the disease in tuberculosis and glanders, one naturally concludes that the virus of syphilis is probably of an analogous nature. Again, attention has been directed to certain points of resemblance between syphilis and the acute exanthemata, viz., definite incubation periods, succeeded by symptoms of general infection, with an outbreak on the skin and mucous surfaces, together with a transitory congestion of various organs and tissues. We must add to this, immunity conferred by one attack, and the curious fact that in all the acute fevers, as well as in syphilis, the cause has not yet been elucidated.

In the year 1872, Dr. Lostorfer, of Vienna, asserted that the blood of syphilitic persons contains certain peculiar bright bodies, which become developed in it in from one to five days after it has been taken from the patient. The method he adopted was to take a drop of blood, obtained by puncturing the skin, and transfer it to a smooth slide and cover it with a piece of thin glass. The slide was then placed in a moist chamber. Various other observers have found similar bodies in the blood of healthy individuals, when treated in a similar manner. All these results, however, are quite valueless, as the blood is a most excellent cultivating medium, and in these experiments various micro-organisms from the air probably became developed.

From 1877 to 1884, a great many observers described organisms in various kinds of syphilitic products; and Martineau and Hamonic claimed to have succeeded in inoculating pigs with a culture from an infecting chancre. Other experimenters, however, have failed to confirm these views.

In 1884, Lustgarten announced that he had succeeded in detecting bacilli in syphilitic tissue by means of a special staining method. The sections to be examined are stained with Ehrlich-Weigert's solution of gentian-violet and decolourised by permanganate of potash and sulphurous acid. The bacilli appear in groups of two to eight, enclosed in cells double the size of white blood-corpuscles. They are very difficult to find and demonstrate; but are most numerous on the border line between the sound and infiltrated tissue.

It has been proved that ordinary smegma contains a bacillus resembling and staining like Lustgarten's syphilis bacillus.

In 1885, Doutrelepont and Schütz asserted that they could demonstrate the presence of bacilli in syphilis by a special staining method; and claimed that this plan did not colour the bacilli of smegma, like Lustgarten's method.

In 1886, Eve and Lingard claimed to have demonstrated the true bacillus of syphilis. In a communication to the *Lancet*, they described their bacillus as being about the size and shape of that of tuberculosis. It is found on the border line between the healthy and the diseased tissues, and can be demonstrated in initial lesions, specific buboes, condylomata, and gummata. They also succeeded in obtaining cultures upon blood-serum, agar agar, and hydrocele fluid. They failed, however, to inoculate animals with the culture.

It has been pointed out that a great similarity exists between syphilis and the acute exanthemata; and Koch, failing to demonstrate bacteria in these diseases, suggested that they may be due to the presence of protozoa. Working on this suggestion, Daehle, in 1892, claimed to have discovered parasitic protozoa in syphilitic secretions. As a large amount of active work is now being carried on in this department of pathological research, it is probable that at some future time, many of the obscure points in the etiology of syphilis will be cleared up, as is being done in the case of the acute exanthemata. The probability is much strengthened by analogies existing between this class of diseases and syphilis.

CHAPTER V.

VEHICLES OF THE SYPHILITIC POISON AND THE MODES OF ITS COMMUNICATION—SYPHILIS AND VACCINATION.

THE contagion of syphilis is contained in the débris of tissue resulting from the disintegration or suppuration of certain syphilitic growths or sores; it is most abundant in the discharge from a moist syphilitic papule and in that of an infecting sore. Pus obtained from a non-syphilitic eruption in a syphilitic patient does not necessarily contain the germs of syphilis, and the same holds good of an eczematous secretion in such a patient, and of vaccine lymph, unmixed with blood, from a similar source. The blood of patients suffering from secondary syphilis generally contains the germs of the disease. Inoculations with the blood of persons showing active secondary syphilis have been successfully made by Waller, Diday, and others; but it has not yet been proved that the virus is present in the blood during the periods between the outbreaks of secondary eruptions—that is, during the latent stage. The opinion of Finger upon this point has been previously quoted. Syphilis has been known to be transmitted from one patient to another by the operation of skin-grafting,* and in former days, when dental transplantation was practised, syphilis was not infrequently conveyed with the transplanted tooth. Cases of this kind are mentioned by Hunter.

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* "Annales de Dermatologie et de Syphiligraphie," tom. iii. 1882, p. 129.

It is doubtful whether syphilis can be conveyed to a child through the milk of a syphilitic nurse whose nipples are perfectly free from any local affection. A few recorded cases seem to show that such transmission is not impossible, but it must be remembered that accidental inoculation of the disease occurs so frequently, that every other mode of infection must be rigidly excluded before ascribing it to this source. If erosions or moist papules be present on the nurse's nipples, infection is sure to follow. A similar question has reference to the saliva of a syphilitic subject. If this contain the débris of syphilitic sores on the lips, tongue, or any part of the mouth or throat, it may convey syphilis to a healthy person. Inoculations with semen from syphilitic individuals upon healthy ones, have yielded negative results. There are cases on record in which the operation of tattooing resulted in the transmission of syphilis. A professional tattooer moistened his pigments and needles by placing them in his mouth, in and around which were syphilitic ulcers. With regard also to the catarrhal secretions of other mucous membranes of syphilitic subjects, they will give rise to the disease only if they contain the débris of syphilitic sores or growths. The secretions from tertiary lesions are generally stated not to transmit syphilis when inoculated upon healthy individuals; but it has not yet been decided whether the secretions from the precocious ulcerations of malignant syphilis are infectious or not. It must, however, be noted that various competent observers have occasionally witnessed cases where the husband, whilst suffering from tertiary syphilis, has infected the wife; but whilst we must in the present state of our knowledge admit that such an occurrence may possibly occur, yet we must remember that it is most difficult in these cases to exclude every other source of infection, and that this uncertainty as to the source of the virus must raise grave doubts in our minds that tertiary lesions are infectious.

The vehicles of the syphilitic virus are therefore—1. The discharges from the ulcerated induration. 2. The discharges from mucous papules and other secondary syphilitic manifestations. 3. In some cases the blood of patients suffering from secondary syphilis. 4. Physiological secretions, if they contain the débris of syphilitic ulceration. It would appear that pathological secretions not directly belonging to syphilis, do not, as a general rule, contain the syphilitic virus. 5. Hereditary transmission. This subject will be discussed at length in a special chapter.

THE MODES BY WHICH SYPHILIS MAY BE COMMUNICATED.

There are only two ways by which it has been proved that syphilis can be communicated. 1. Its virus may be brought into contact with the healthy body, gaining access to the system either beneath the epidermis or beneath the epithelium. Syphilis is then said to be "acquired." 2. It may be transmitted by inheritance. The other methods by which it is alleged that syphilis may be communicated, will be discussed under the head of Hereditary Syphilis.

In the acquired form of the disease the poison may be conveyed either directly or indirectly. Direct communication during sexual intercourse is the most common way in which the disease is conveyed. The genital organs are therefore the most frequent seat of infection (in 91 per cent. of all cases). Very slight and superficial detachment of the epidermis or epithelium suffices to permit the virus to gain access to the system. If cracks or erosions be present, absorption is of course facilitated. The poison is not infrequently conveyed to the mucous membrane of the lips, in kissing, by a person suffering from secondary affections of the mouth and throat. The lips are the seat of infection in about 3 per cent. of all cases. Other parts of the face and the tongue are sometimes infected in a similar manner. Infection from tooth-transplantation and from skin-grafting has been already referred to. Frequent instances of direct infection are seen in the cases of nurses infected by suckling syphilitic children, and in cases of children by their being suckled by women with syphilitic lesions of the nipples. Medical men and midwives sometimes become inoculated with the virus, when attending women suffering from primary or secondary sores. Infants in such cases are sometimes directly infected during parturition.

Syphilis may likewise be acquired indirectly, and the mucous membrane of the mouth is the part most often affected in examples of this nature. Thus the secretions from the mouth of a person affected with syphilitic lesions of that part may adhere to drinking utensils, tobacco-pipes, and other articles used by several persons in common. and may thus convey the disease Instances of this kind have occurred in glass factories, where one blowpipe is used by several workmen, and passed from mouth to mouth. The conveyance of syphilis in the operation of tattooing, already referred to (see p. 55), is an example of this kind. Surgical instruments, such as cupping-lancets, tongue-spatulæ, Eustachian catheters, tooth-forceps, &c., have been the means of conveying the disease.

Among Jews and Mahometans the operation of circumcision is sometimes followed by general syphilis, the poison being conveyed by the instrument, or else by the mouth of the person who sucks the wound.

With regard to syphilitic infection in general, it may be stated that the bodies of all healthy (*i.e.* non-syphilitic) persons offer an equally favourable soil for the reception of the poison. No healthy person exhibits immunity from the disease, if the virus be properly inoculated; all are alike liable, irrespective of age, constitution, or temperament. It would appear probable that the subjects of hereditary syphilis are to a certain extent protected, and that the acquired disease assumes in them a milder form. Syphilitic re-infection may occur—that is, a person may acquire the disease and go through many of its stages, and then some time afterwards, after exposure to contagion, may acquire the disease anew. This important subject will, however, be discussed in a subsequent chapter.

There is, lastly, one other source of infection, viz., vaccination, which, from its importance, deserves a lengthened consideration, and to which a special section will be devoted. Inherited syphilis will be treated of in a separate chapter.

Syphilis and Vaccination.

The question as to whether the syphilitic virus can be conveyed to a healthy child with the lymph used in ordinary vaccination has now been decided in the affirmative. It has been clearly shown that syphilis and cow-pox can be transmitted simultaneously from one person to another. Since the early part of this century numerous cases have been reported of children becoming syphilitic after vaccination; indurated ulcers appearing at the spots where the lymph was inserted, and being followed by more or less severe secondary manifestations. In many of the cases the disease was transmitted to the mothers or nurses of the infected children. Cases of the transmission of syphilis by means of vaccination have been reported from almost every country in Europe, and the literature of this subject is now very copious. Communication of the disease in this manner is, however, much rarer at the present day, since "calf-lymph" has more or less commonly superseded the use of "humanised lymph." But it may occur even with the former kind, if the instrument used in vaccinating has been employed in a syphilitic subject, and has not been sterilised.

A consideration of these cases shows that when several children are vaccinated with lymph taken from a syphilitic child, a certain proportion almost invariably escape, but that the majority become infected. In those who escape contamination, the vaccination may either fail altogether or may follow the normal course. In those who are infected, there may be no characteristic vesicle, but, three or four weeks after the vaccination, an indurated nodule or an indurated ulcer appears at the spot to which the lancet has been applied. In another class of cases, the vaccine vesicle appears in due course, dries up, or bursts and cicatrises, and is followed in from four to eight weeks by the development of induration and ulceration.

With regard to those instances in which several children have been vaccinated directly from the same source, and some have become syphilitic while others have escaped, the question naturally arises as to how the difference can be accounted for. Another peculiarity has also been observed. When syphilis has thus been transmitted, it has sometimes happened that only one of the punctures has given rise to induration and ulceration. The majority of these cases can be explained by supposing that the virus of syphilis is contained not in the vaccine lymph, but in the blood which is sometimes mixed with the latter when the operation is carelessly performed. We know that the blood of a patient in the active stage of secondary syphilis can, when inoculated on a healthy person, produce an infecting chancre. But it does not seem necessary that visible blood should be drawn in order to produce syphilis, for the lymph may be contaminated from the serum which oozes from the vesicle after the first portion of the vaccine lymph has drained away. When many infants are vaccinated from the same source, it may easily happen that the operator, in his endeavour to obtain sufficient lymph, passes his lancet too deeply into the vesicles and causes blood to escape. Supposing the source to be contaminated, the children vaccinated with the mixture of lymph and blood will become infected, while those vaccinated with pure lymph will escape: The same hypothesis will serve to explain the difference between the punctures in the same child. In experiments in which healthy persons were inoculated with lymph carefully taken from vaccine vesicles developed in syphilitic subjects, no ill results followed.

It has been pointed out by Zeissl and others that persons, whether infants or adults, affected with constitutional syphilis, are peculiarly prone to the development of ulcers when inoculated with the contents of a pustular or vesicular eruption. The vesicle produced by vaccinating a syphilitic infant may be in reality the primary stage of an ulcer, the secretion or débris of which contains the syphilitic virus. A healthy child, vaccinated from such a vesicle, in all probability becomes syphilitic; no characteristic vaccine vesicle is developed, but some weeks after the operation, induration and ulceration make their appearance.

The course of transmission is sometimes reversed. Thus the child supplying the lymph may be healthy, and may be infected by the lancet which has been used in puncturing or scarifying the arm of a syphilitic child. In this case the blood is the vehicle which transmits the poison. Again, when several persons, one of whom is syphilitic, are vaccinated directly from the same infant, not only the latter but certain of the other individuals may become infected, if only one lancet be used and not carefully cleansed after each vaccination. When vaccine points are used, they are sometimes moistened with saliva; and in this way syphilis may be communicated. Another possible source of contamination must be recognised. Vaccination is strongly objected to by many of the lower classes; and it is a frequent practice for them to suck the vaccination scratches in order to prevent the lymph "taking."

The fact, already alluded to, that syphilitic infants are especially prone to the development of ulcers under the influence of irritants, has an important bearing upon those cases in which syphilis is alleged to have been conveyed by vaccination. While fully admitting the possibility and frequent occurrence of this mode of infection, it is certain that in many of the cases which have been reported the vaccination simply caused syphilitic symptoms to appear in infants who had inherited the disease, but who had not previously exhibited any obvious manifestations. If the eruption follows closely upon the vaccination, without the development of an ulcer, preceded by a period of incubation, it may be assumed that the case is really one of latent syphilis.

The lesion of vaccinal syphilis may be mistaken for an ulcerating vaccine lesion. The following table shows the differences :—

Vaccinal Syphilis.	*Ulcerating Vaccine Lesion.*
Appears generally after twenty-one days.	Appears on twelfth to fifteenth day.
Rarely affects all vaccine pustules, generally only one.	Ulceration involves all vaccine pustules.
Slightly inflamed and often covered with a crust. If ulcerating, has indurated base and little discharge.	Appears as an acutely inflamed ulcer, with profuse discharge.
Skin around only very slightly inflamed.	Skin around red and œdematous.
Lymph glands always enlarged, hard, and not painful.	Lymph glands enlarged and painful.
Characteristic rash appears after about two months.	May be followed by a rash, but this always shows itself within two weeks of vaccination.

From the above facts and considerations it would appear that the risk of conveying syphilis by vaccination may be rendered practically non-existent by the scrupulous observance of certain precautions, which are as follows :—(1) Always use calf-lymph when possible. (2) The child yielding the vaccine should be at least eight weeks old, and it and its parents should be free from all trace of syphilis. (3) The lancet used should be perfectly clean and bright, and should be carefully cleansed with boiling water after each operation. (4) The greatest care should be taken not to draw blood when puncturing the vesicles, and, should blood appear, not to use the lymph mingled with it. Care should be taken, also, not to drain the vesicles. (5) Perfectly normal vesicles should be chosen—on the eighth day, if possible.

With regard to the age of the child from whom the vaccine is taken, the statistics of 158 cases of hereditary syphilis show that in 146, symptoms appeared before the end of the third month, and only in 12 after that period.

CHAPTER VI.

THE SOFT OR SIMPLE CHANCRE—PSEUDO-SYPHILIS—THE CHANCROID—NON-INFECTING SORE.

The views which I entertain with regard to the differences between the virus of syphilis and that of the soft sore have been described at some length in a preceding chapter (see p. 35). It was there explained that, in my opinion, the soft sore is not dependent upon a specific virus, and that it gives rise to changes of a purely local character. Its poison is capable of being generated *de novo*, and is then communicable from person to person. Inoculated under the epidermis or epithelium it causes irritation and the development of a pustule, which is succeeded by an ulcer. The irritation frequently spreads to the neighbouring glands, and induces inflammation and suppuration. The secretion of the ulcer itself and the pus from the suppurating glands form the vehicles for the poison; and generally the presence of the staphylococci or streptococci usually found in ordinary pus may be demonstrated. On the other hand, very many observers maintain that the chancroid is due to a specific virus, and though at some future time the existence of a specific micro-organism may be satisfactorily proved, up to the present this has not been done. Of the two lesions, the chancroid is much more frequent than true syphilis. The soft chancre may

EXPLANATION OF PLATE I.

Fig. 1. Soft sores, one situated on glans, and the other on foreskin: paraphimosis.

Fig. 2. Multiple soft sores with phimosis.

Fig. 3. Phagedæna of foreskin.

PLATE I.

Fig 1.

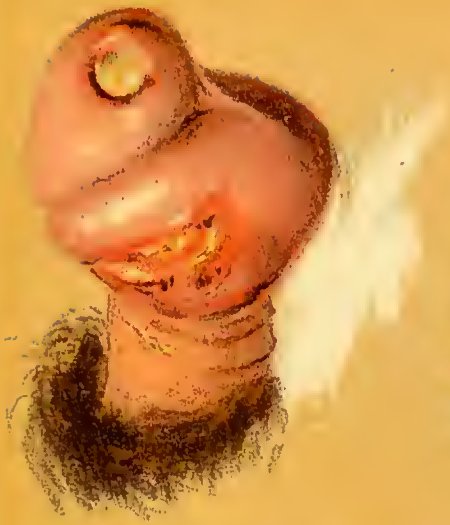


Fig 2.

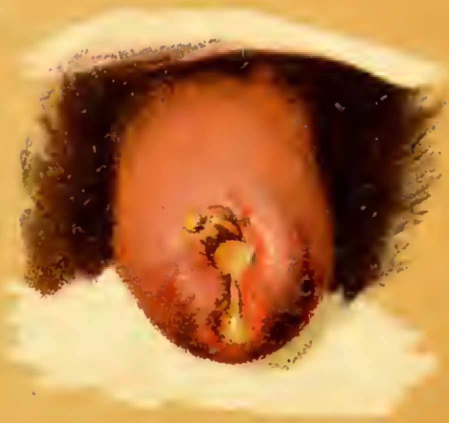
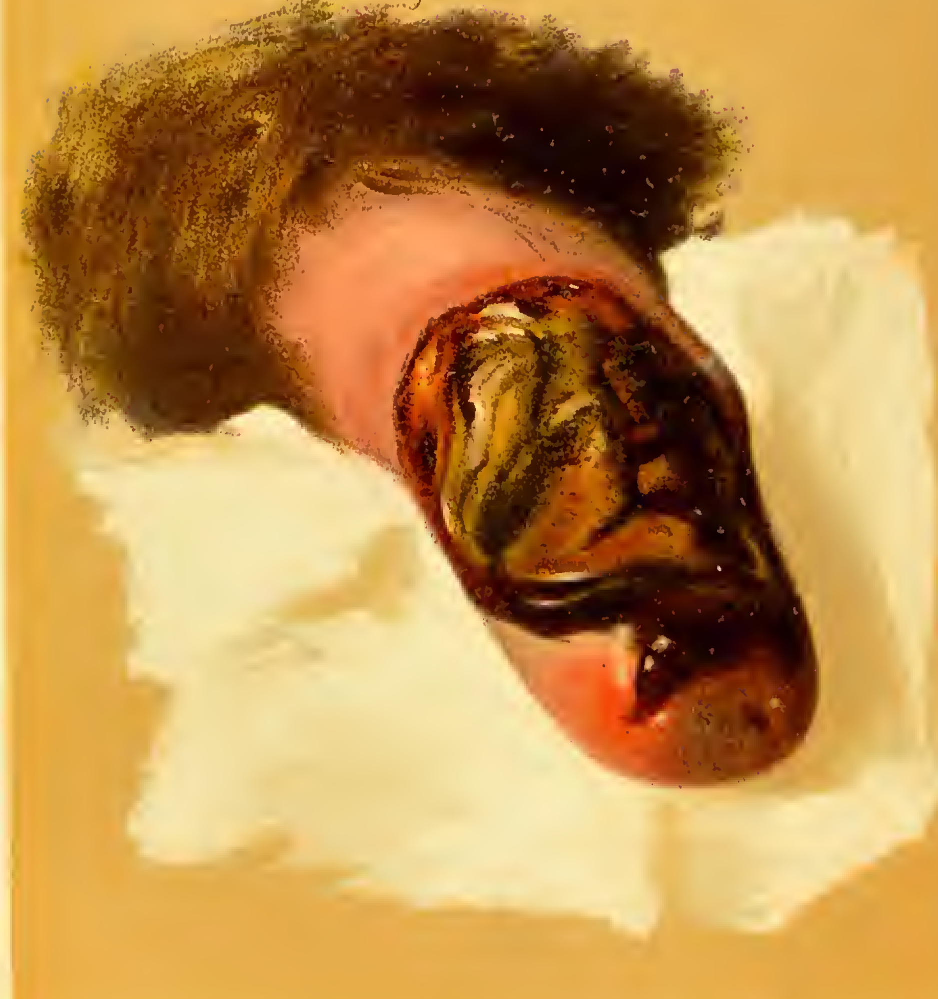


Fig 3



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be found on any part of the body, but as it is most often acquired during sexual intercourse, the genital organs are its usual seat (see Pl. I. & II.). In men it is most often found on the glans and prepuce; in women, on the internal surface of the labia majora and minora. In both sexes it is often multiple. Its secretion is readily auto-inoculable. The soft chancre appears very soon after exposure to contagion, in the form of a small reddish patch; this becomes swollen, and gives place to a pustule which soon breaks and is succeeded by an ulcer. The pustular stage may be wanting; an excoriation or crack may be the first appearance. In whichever way developed, the ulcer increases in size up to a certain point, and then remains stationary. If at first circular in form, it is apt to lose this shape, and to become oval or irregular. It is usually flat and superficial, but its depth varies, and appears to depend upon the part on which it is situated. At an early period other soft chancres are often formed on adjoining parts by auto-inoculation, and it frequently happens that several sores make their appearance simultaneously. The edges of the ulcer are more or less perpendicular, and they often appear clean cut as though with a punch; they are sometimes everted. The floor of the ulcer is irregular, and covered with more or less yellowish or greyish matter, consisting almost entirely of pus. The border of integument surrounding the ulcer is red and painful. The base is usually soft or supple, and when the sore is pinched up between the fingers, there is no feeling of semi-cartilaginous induration. A certain amount of inflammatory swelling may, however, be set up by local irritation, but this subsides under rest and appropriate treatment.

The form and number of the sores vary greatly. On the edge of the prepuce there are often numerous ulcerating fissures; on the internal and external surface of this part, the ulcers are usually flat and superficial, or only slightly excavated. Sometimes, however, the ulceration extends through the prepuce and perforates it in one or more places. Ulcers near the frænum, as a general rule, perforate this structure and sometimes completely destroy it, and perforation of the urethra sometimes takes place from below (see Pl. II., Figs. 2 & 3). On the glans penis, the ulcers usually penetrate somewhat deeply. An ulcer at the apex is apt to surround the orifice of the urethra, and sometimes involves a portion of the mucous membrane of the latter structure. In other cases it extends for some distance down the urethra. The sulcus at the base of the glans penis is a frequent seat of chancre, which in this situation often attains a large size and becomes multiple. The union of several sores may cause the ulceration to involve the entire sulcus and to penetrate deeply into the substance of the glans. Great swelling of the prepuce and phimosis or paraphimosis are especially apt to be associated with chancres in this situation, and sometimes both corpora cavernosa become involved in the swelling. Chancres are less common on the integument of the penis and scrotum. When they occur near the root of the penis they often assume a large size, and are apt to spread deeply in the tissues covering the pubes. On the female genital organs, soft chancres are generally found at the entrance to the vagina, on the inner surface of the labia majora, near the posterior commissure and the fossa navicularis. Multiple chancres are, of course, very common as a result of auto-inoculation. On the mucous membrane of the vagina and on the portio vaginalis uteri, soft chancres are less common.

Soft chancres are also found on other parts of the

EXPLANATION OF PLATE II.

Fig. 1. Destruction of foreskin the result of phagedæna.

Fig. 2. Destruction of frænum by ulceration of soft sore.

Fig. 3. Side view of ditto.

PLATE 2.

Fig 1.

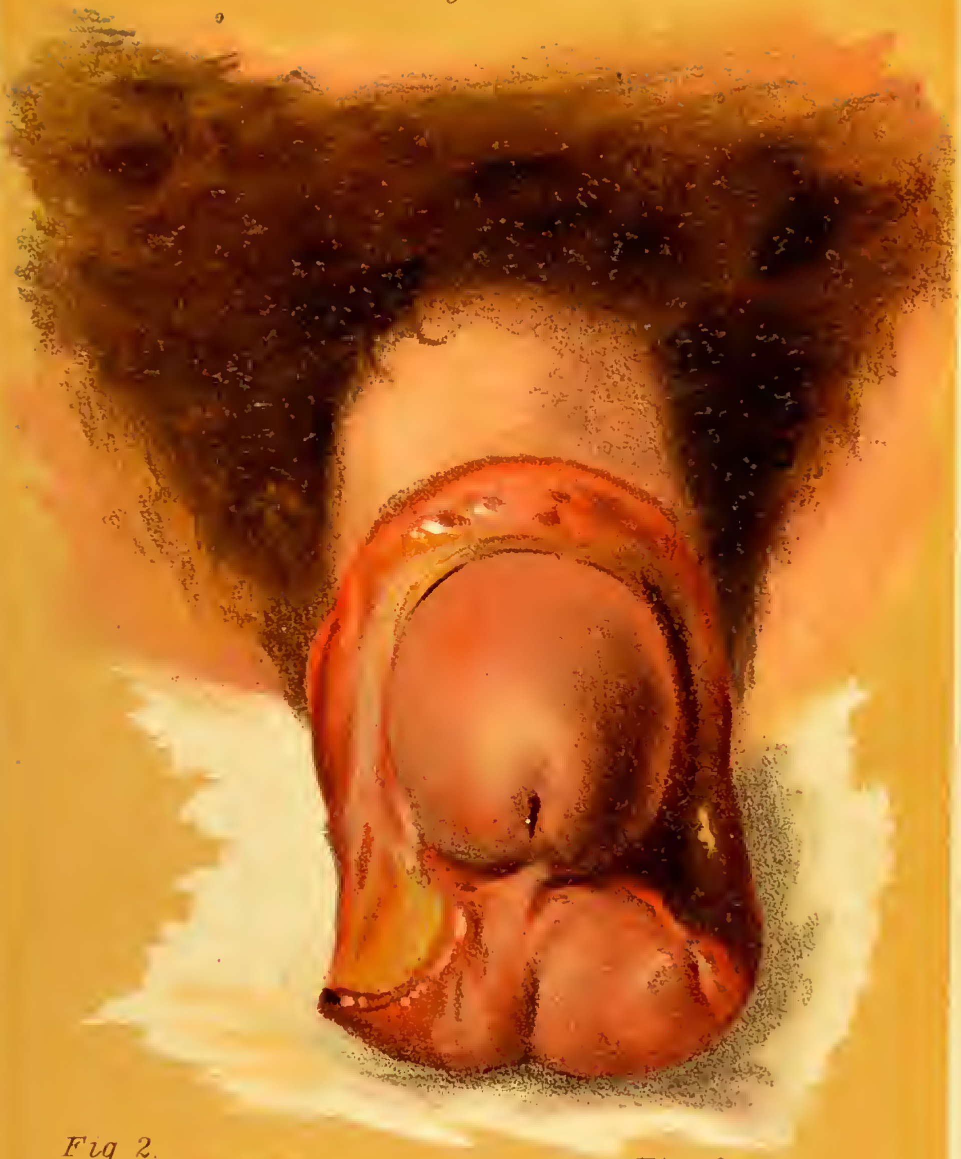


Fig 2.

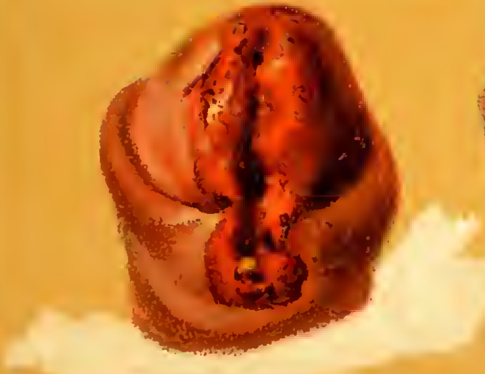
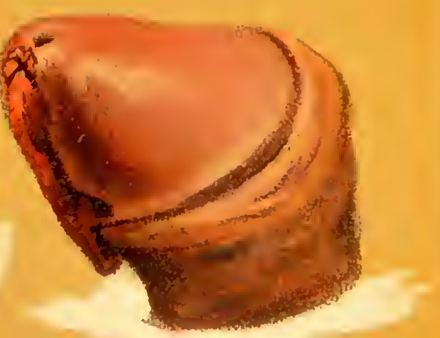


Fig 3.



Hanhart lith.

body besides the genital organs. The soft chancre being readily auto-inoculable, an ulcer is liable to form on any part with which the secretion from the sore comes into contact. The slightest abrasion or excoriation is sufficient to enable the virus to gain access to the tissues. Thus, chancres are often seen on the mons Veneris and in the neighbourhood of the anus, on the pubes and lower part of the abdomen, and on the inside of the thighs. They are also found on the nipple, the lips, the tongue, the cheeks, and the fingers. They have also been found on the scalp, but chancres on this part are usually of the indurated kind.

A soft chancre left to itself, usually continues for from two to four weeks, without showing any tendency to heal. At first, indeed, it often tends to spread and burrow, and to invade neighbouring tissues. This process generally ceases during the third week, when the swelling, soreness, and secretion gradually diminish, and the stage of granulation sets in. The edges of the sore become flattened, the granulations become more and more prominent, and are covered with a healthy yellowish pus, whilst cicatrisation gradually progresses from the circumference towards the centre. The resulting cicatrix corresponds in size to the ulcer, is not indurated, but is more or less depressed. Sometimes the granulations become florid and fungous, and rise above the level of the edges. Each freshly-inoculated chancre pursues the same course as the one from which it was derived. The chancres which appear last have usually a more rapid course than the original one.

THE DIAGNOSIS OF A SOFT CHANCRE.—This can generally be made without difficulty, but it is sometimes almost impossible at one examination to arrive at a definite conclusion as to the real nature of the case. We are, of course, guided by the situation of the sore, and by the account of its development, as given by the patient. When the genital organs of an adult are the seat of a lesion presenting the ordinary signs of a soft sore as given above, and there is a history of exposure to contagion, the nature of the case will be perfectly obvious, but bearing in mind that it may be a mixed chancre. it is impossible to give off-hand a declaration that it is not syphilis as well. When the sore is situated elsewhere, as, for example, on the face, fingers, buttocks, etc., the diagnosis may present many difficulties. The contagious character of the discharge is an important element. It is a well-established fact that the secretion of a soft sore, inoculated on a healthy person, or on a syphilitic individual, will, in the large majority of cases, give rise to a sore of the same character, and yielding an inoculable secretion, etc. The first of these tests, viz., inoculation on the patient, can sometimes be resorted to, but the attempt is not always successful. It has also been shown by recent experiments (see p. 47) that pus of a non-specific character inoculated upon the patient himself, or upon other non-syphilitic persons, may cause the formation of pustules, the contents of which are also inoculable. The value of experimental inoculation, as a diagnostic test, is therefore less than was at one time believed, and more reliance must be placed upon the history of the case, the absence of a distinct period of incubation, the multiplicity of the sores, and the absence of an indurated base.

With regard to the differential diagnosis of the soft sore, the lesions most resembling it are herpetic ulcers (to which some persons are peculiarly liable), abrasions produced during coition, an ulcerating syphilitic papule attacking the genitals, gummatous, cancerous, and tuberculous ulcers, and lastly, those forms of infecting sore in which the induration is either very slight or altogether absent.

Herpetic eruptions often occur on the genital organs. The prepuce is their most frequent seat, but they are also seen on the glans penis and body of the organ, on the integument of the scrotum, and on the vulva in females. The vesicles are more or less numerous, and their eruption is attended with itching. They are small in size; their contents are at first transparent, but soon become turbid. If protected from irritation, friction, etc., they speedily dry up and form thin scales, which become detached, leaving no scar behind them. If, as often occurs, the epidermis is rubbed off, small ulcers are seen. The vesicle or pustule with which a soft sore sometimes commences, is larger than that of herpes; its contents are, or very soon become, purulent, and the area surrounding it presents more decided signs of irritation. The existence of several vesicles or groups of vesicles would indicate the herpetic nature of the case. The two affections may, however, co-exist, and one or more vesicles of the herpes may take on the chancroid characters. Under such circumstances, a mistake may easily be made if a decided opinion be pronounced. If the appearance is due to herpes alone, it will subside in the course of a few days.

Erosions produced during coition vary much in appearance. If overlooked and unattended to, it may be impossible to decide as to their real nature. If, however, the patient's statements with regard to the time of their occurrence can be relied on, and ordinary cleanliness has been observed, the diagnosis can generally be made. The opinion, however, must at first be a guarded one, inasmuch as an abrasion may form the starting point of either form of sore. Under ordinary circumstances, and with proper care, abrasions heal up in the course of a few days. The possibility of subsequent induration must not be forgotten.

An ulcerating syphilide on the genitals frequently simulates chancroid. It may be distinguished by the history of the case, the general appearance of the lesion, wanting as it does the punched-out look of chancroid, but above all, by the presence of other syphilides on other parts of the body.

Ulcerating gummata on the genitals may give rise to sores which at first sight may be mistaken for soft chancres. The history, however, of a previous induration, the absence of acute inflammation, and of any sympathetic glandular enlargement will clear up the diagnosis.

Epithelioma of the penis gives rise to ulcers resembling both forms of sore. The diagnosis, however, can seldom present much difficulty. Epithelioma commences in the prepuce or glans penis as a subcutaneous induration, or as a warty growth, which soon ulcerates. The surface of the ulcer is not smooth, but more or less irregular, papillated, or villous. Fresh growths make their appearance and pursue the same course, and the ulceration extends with more or less rapidity. The microscope, if necessary, may be used to aid the diagnosis. The curdy material, which can be pressed out from epithelial growths, presents a characteristic appearance. Should there be any doubt as to the nature of the case, mercury should be tentatively administered.

Tubercular ulcerations of the penis are occasionally confounded with soft chancres, but they may be distinguished by their slow progress and chronic character, by the presence of other tubercular lesions elsewhere, and by the demonstration of the characteristic bacilli in the scrapings.

The differential diagnosis of the soft and hard sore will follow the description of the latter.

The Minute Anatomy of the soft sore has been very carefully studied by Cornil, Kaposi, Finger, and others. The ulcerated portion has an uneven surface, the excavation being more or less deep, and is covered with a considerable quantity of pus, which also infiltrates the base of the ulcer. From the surface a uniform and extraordinarily thick small-celled infiltration passes deeply into the corium. Here it terminates, its deep limit being pretty sharply defined. The infiltration penetrates for some distance laterally, invading the papillæ covered with epithelium. The margin of the ulcer is formed in part by a group of swollen papillæ, and between them the Malpighian layer is increased in thickness. The surface of the ulcer is formed by the exposed corium infiltrated with cells, the papillæ being wanting. The infiltrate shows a reticulate structure holding together numerous embryonic and epithelioid cells, the whole being permeated by a network of lymphatics, many of which open on to the floor of the ulcer. The tunica adventitia of the vessels is much thickened, and the vessels themselves are dilated and increased in number.

Complications.—A soft chancre by no means always follows the simple course above described; the sore itself may become altered in various ways. It may be the seat of gangrene or phagedæna, and diphtheritic forms of soft chancre also occur. It may, in addition, give rise to phimosis and paraphimosis, to lymphangeitis, and to inflammation and suppuration of the glands in the groin.

Gangrene of a chancre is of rare occurrence, but it is sometimes seen in persons debilitated by previous illnesses and excesses of various kinds, and especially by excessive use of alcohol. Phimosis and paraphimosis, want of cleanliness, improper and irritating applications, may set up gangrene in predisposed persons. The first sign of gangrene is the appearance of inflammation around the sore. This becomes surrounded by a red and swollen areola, the colour of which grows darker and darker; the surface of the sore assumes a brown colour and secretes thinnish, dark-coloured pus, and, finally, the sore and its surroundings become of a dark colour and evidently reduced to the condition of a slough. This gradually separates, leaving a more or less extensive ulcer behind it. In neglected cases of phimosis, both layers of the prepuce may become involved, and an opening forms, through which the glans penis partially or entirely protrudes. The dorsal artery of the penis may be opened by the spread of the gangrene, and troublesome hæmorrhage ensues. The gangrene may spread until large portions of the genital organs are destroyed. In such cases, severe constitutional symptoms accompany the spread of the local disorder.

The Phagedænic variety of chancre was formerly much more common than it is at present (see Pl. I., Fig. 3). The severity of the epidemic at the end of the fifteenth century was in great measure due to the prevalence of this form of the disease. The destructive action may spread equally in all directions, and may be very rapid, or it may take a more definite course, involving the tissues in one direction only, while granulations spring up in the part originally affected. This latter is the *serpiginous* form of phagedæna. A third variety is the *sloughing phagedæna.* These last-named forms of chancre occur in persons of depraved constitution, and in those debilitated by want and by excesses of all kinds, especially by drunkenness, and are due not to the virulence of the poison, but to a lessened resistance of the tissues. Active mercurial treatment, in the case of scrofulous or anæmic patients suffering from chancre, was probably a frequent cause of phagedæna in bygone days. It may also be seen in diabetics, and in cases of marked tubercular or syphilitic diatheses. That it is the soil which is principally responsible for the occurrence of phagedæna is shown by the fact that the contagion from the same soft chancre may produce in one an ordinary chancroid, and in another a phagedænic ulceration.

When a chancre becomes phagedænic, the ulcer extends superficially and deeply, and becomes more irregular in shape. The base and edges are livid and œdematous, and the floor is covered with greyish or brown to black sloughs, which break down at the centre, discharging thin blood-stained pus. The patient complains of excessive pain of a smarting or burning character in the ulcer.

In the *serpiginous* form the destructive action continues, and follows a more or less definite course. The ulcer extends superficially rather than deeply. The progress is ordinarily slow, and the ulceration may continue to spread for several months. The destruction proceeds from a portion of the circumference of the original sore, and spreads in a curved manner, the spreading being accompanied by a more slowly advancing cicatrisation commencing at the site of the original ulcer. The spread of the ulcer is also promoted by auto-inoculation from the secretion it yields. In this way a large surface may become involved. Thus the ulcer may spread over the penis, the scrotum, portions of the inguinal region, thighs, or abdomen.

The *sloughing phagedæna* is more severe and rapid, and spreads more deeply. The symptoms resemble those of hospital gangrene. As the ulcer spreads the surface sloughs more or less deeply. The ulceration extends chiefly to dependent parts, as the scrotum and labia. The pain is very severe, and the constitutional disturbance very considerable. This form is rarely seen at the present time.

The *diphtheritic* chancroid is related to the gangrenous form. The sore becomes covered by a sharply defined, flat, yellowish-white adherent false membrane, which is not sensitive to the touch, and yields a little thin secretion, or is almost dry. This change in the sore may take place at the commencement of the healing process. There is no area of inflammation round the membrane. No change occurs for some time in the appearance of the sore, but after a while granulations spring up, pus is secreted, and the false membrane becomes detached. Cicatrisation rapidly follows.

Phimosis may occur, in the course of a soft chancre, as a result of inflammatory infiltration of the prepuce or of swelling of the glans penis (see Pl. I., Fig. 2). The prepuce is apt to become swollen when there are one or more sores on its border, and both it and the glans are liable to become infiltrated when the chancre is situated on the inner surface of the prepuce, or in the furrow at the base of the glans. Under these circumstances, if the prepuce cannot be retracted, the secretion accumulates, the ulceration tends to spread, and new sores form. Unless the condition be relieved, the ulceration may lead to perforation of the prepuce to such an extent as to allow the glans to protrude through the opening; or the urethra may be opened by the spreading of the ulceration. In addition to this, as the sore heals, adhesions may form between the glans and the prepuce.

Paraphimosis occurs less frequently than phimosis (see Pl. I., Fig. 1). It is an occasional complication of soft sores at the base of the glans penis. The prepuce having been retracted, the swelling due to the inflammation prevents it from coming forward over the glans and constriction takes place. This increases the congestion and swelling of the glans, and the subcutaneous tissue at its base rapidly becomes œdematous. Unless relieved, the constricting portions are apt to become ulcerated, and even gangrene of the glans penis may occur.

Inflammation of the Inguinal Glands.—The most frequent consequences of a soft chancre are inflammation and suppuration of the neighbouring lymphatic glands, preceded in some cases by similar conditions of the lymphatic vessels. When these latter are affected, they are found as one or more swollen hard cords or red lines, in the integument of the penis, running from the neighbourhood of the sore and along the median line of the dorsum of the penis towards one or both groins. These cords are swollen and thickened lymphatic vessels. The swelling may be either uniform or nodulated; and it is generally accompanied by more or less inflammation. After remaining for a few days, the redness and swelling may gradually disappear, but if the irritation is severe, abscesses may form in the course of the inflamed vessels. Such abscesses are seen on the dorsum of the penis, where, on bursting, they give rise to small ulcers. The inflammation generally extends to the neighbouring glands, but these latter are often severely affected without any apparent inflammation of the lymphatic vessels.

The processes which take place in the glands vary according to circumstances. Inflammation and suppuration, with their attendant symptoms, constitute the ordinary course, but the process is not always of an acute character. The enlargement is sometimes slow, gradual, and unattended with much pain; the swelling is then termed indolent or chronic. The sore may be in a stationary condition, or even healed, yet the glandular enlargement may be rapid, painful, and go on to suppuration, though with proper treatment this latter can generally be avoided. If, however, the sore is in a state of active ulceration, the symptoms of the glandular enlargement will be frequently, but by no means always, correspondingly severe; indeed, it is possible for a large portion of the penis to slough away either without involving the lymphatics, or affecting them only in a very slight degree.

The genital organs being the common seat of chancroids, the inguinal glands are those most frequently affected. In chancres of the lips or tongue, the sublingual and sub-maxillary glands are apt to become enlarged, while in chancres on the hand the swelling affects the axillary glands and the gland near the elbow. An inflammatory enlargement of a lymphatic gland is called a bubo. An inguinal bubo is not always on the same side as the chancre to which it is due, and chancres situated near the median line of the penis, especially those near the frænum, may give rise to buboes in both groins. A form of bubo has been described under the name of *bubon d'emblée*, in which evidences of a primary lesion are wanting. It is supposed by some that a chancroid or syphilis may give rise to bubo without any antecedent ulceration as a starting-point. It would, however, appear to be more probable that in these cases the primary ulcer has been very slight, has healed quickly, and has therefore been overlooked by the patient.

Buboes are more common in male than in female patients. This difference is chiefly due to the occupations, and to the more active habits of life of the male patients. It is well known that active exercise tends to produce bubo in those suffering from chancre. Some patients are also much more liable than others to glandular enlargements as a result of irritation.

The first symptoms of acute bubo are tenderness, pain, and swelling of the affected glands. These symptoms rapidly increase, and are often accompanied by more or less fever. If only one gland at first appears to be implicated, the inflammation soon spreads to others in its vicinity; the tumour increases in size, and the skin covering it becomes red and very tender. In inguinal bubo, all attempts to move the thigh cause great pain. Not only the glands are affected, but the loose connective tissue between them becomes involved in the inflammation. Buboes usually occur during the first week of the existence of the soft chancre, but they may appear at any stage of its course, and even after the ulcer has healed.

In the acute variety, fluctuation is generally perceptible in from eight to twelve days after the first appearance of the swelling. Sometimes when the swelling has been at first indolent, and has continued so for some time, it suddenly becomes acute, and evidences of suppuration make their appearance. Buboes vary much in size, according to the number of glands involved, and also to the manner in which the irritation and suppuration spread in the interglandular connective tissue. In scrofulous subjects, buboes generally attain a large size, and it often happens that the tumour presents several points, beneath which suppuration is manifest. When this process is fully developed, the pain somewhat abates, the integument gradually becomes thinner and darker, the abscess "points," finally the skin gives way and the pus is discharged externally. Openings may take place at several spots, and sinuses form between them. The process, in favourable cases, usually occupies from two to four weeks from the commencement of the swelling.

The ulcer caused by the bursting or opening of the bubo resembles the chancre from which it originated. It secretes pus, which, like that of the chancre, is inoculable upon the patient or other persons. The size of the ulcer depends, of course, upon the extent of the suppuration; its edges are jagged and generally undermined; its base is concave and irregular, and often covered with shreds of glandular and connective tissue. Sometimes portions of one or more glands protrude from the floor of the ulcer, the connective tissue in which they are normally enveloped having been completely destroyed by the suppuration, while the glands themselves have not suffered to the same extent.

An open bubo is liable to the same complications as sometimes occur in connection with chancres. Thus it may become the seat of phagedæna, gangrene, or the diphtheritic process, or the ulceration may assume a serpiginous type. This last complication is sometimes of a very severe character. The ulceration may spread and involve the entire inguinal region, the lower part of the abdomen, the upper part of the thigh, the perineum, etc. Cases are on record in which this form of ulceration has lasted for years. In another class of cases the femoral vessels have been exposed, with fatal bleeding by ulceration through their walls as a result. Shield* has collected several cases of this complication; with one exception, they were all fatal.

* "Trans. Med. Soc." 1893.

In the majority of cases, however, the bubo, after remaining open and discharging pus and débris for a period varying with its size, gradually closes. Granulations spring up from the floor of the ulcer, the margins assume a healthy condition, and cicatrisation commences. The process is delayed when the edges are much undermined, or are hard and everted; and when sinuses have formed, with several openings in the groin. The healing of the bubo is also much influenced by the general condition of the patient, and by the manner in which the treatment is carried out. If the parts are not kept at rest, the closure may be indefinitely delayed.

Prognosis.—With regard to the prognosis, it may be said, that, as a general rule, the earlier the glands begin to swell after the appearance of the chancre, the greater the tendency to suppuration. On the other hand, when the sore is in process of healing, any glandular inflammation will probably subside without the formation of pus. As a matter of course, exercise tends to increase the probability of suppuration. In tubercular and cachectic patients suppuration is especially likely to occur. The more diffused the inflammation, indicating that the connective tissue is considerably involved, the greater the liability to suppuration.

Diagnosis.—The diagnosis of buboes is generally made without difficulty, but there are other swellings in the groin with which they may be confounded. These may be due to a hernia; an undescended testicle in a state of inflammation; or a varix of the internal saphena vein. A *hernia* is a soft swelling, resonant on percussion, not painful unless inflamed or strangulated; it gives an impulse on coughing and can be reduced by pressure. It increases in size when the patient stands up, and diminishes or disappears when he lies down. If the hernia is strangulated, the symptoms of this condition will establish the diagnosis. An *undescended testicle* in a state of inflammation will be recognised by the absence of the organ from the scrotum on that side, and by the peculiar sensation which the patient experiences when the tumour is manipulated. The latter is ovoid in form, and its long axis corresponds with that of the inguinal canal. *Varix of the saphena vein* is apt to occur near the point at which it empties itself into the femoral vein. The swelling in varix is said to rise and fall isochronously with inspiration and expiration; but this test may fail, owing to thickening of the walls of the vein. If, however, the finger be applied to the vein below the varix, the swelling will subside, but if pressure be applied above the varix, the tumour will become more tense and prominent. In addition to this, a swelling due to varix will more or less subside when the patient is placed in the recumbent position.

TREATMENT OF THE SOFT CHANCRE AND ITS COMPLICATIONS.—If the patient presents himself *while the sore is in its first stage*, it is advisable to destroy the surface, margin, and base of the ulcer by means of a sufficiently energetic caustic. Nitrate of silver, so commonly used, is *quite ineffectual.* Its action is too superficial, and it does little more than set up or increase inflammation. It is the practice of some medical men to touch every chancroid, whilst in the ulcerating stage, with nitrate of silver. This practice is as erroneous as it is deep-rooted, for under the superficial scab so formed, the ulceration goes steadily on, absorption of the products of disintegration by the lymphatics, being helped by the remedy employed, and this is frequently the sole cause of a suppurating bubo. The sore may be conveniently destroyed by Paquelin's or by the electric cautery. A convenient and effectual caustic for the purpose of destroying a circumscribed lesion, is known as *Ricord's paste.* This is prepared by saturating vegetable charcoal with strong sulphuric acid. The action of the latter can thus be localised to the desired extent. A small portion is taken up on a glass rod and applied to the sore. The application causes considerable pain, but only for a few seconds, and this may be prevented by the previous application of cocaine; the caustic is easily manageable, and is thoroughly efficient. The charcoal soon becomes dry, and remains adherent to the slough. The sore secretes but little, and soon heals after the slough has separated. Caustics in the *liquid* form are more or less disadvantageous, mainly because it is difficult to localise their action. Strong nitric acid or the acid solution of nitrate of mercury may, however, be employed. A glass rod or a small splinter of wood is dipped into either of these and applied carefully to the sore. Any excess of acid may be neutralised by allowing a little diluted Liquor Potassæ to trickle over the cauterised spot. Water-dressing is then to be applied and continued until the separation of the slough. When this has taken place the best plan of treatment consists in the application of *precipitated* iodoform. The method which I generally adopt is as follows:—A carbolic acid lotion (1 to 40) is used three times a day in order to keep the sore and its surroundings scrupulously clean. After using the lotion the sore is thoroughly dried with a piece of lint, and the iodoform is then applied with a soft camel-hair brush. When on a visit to St. Petersburg in 1874, I noticed that iodoform was being very extensively used as an application to all forms of ulceration, and particularly to cancerous sores. On my return to England I introduced it, as an application to soft sores, at the Lock Hospital, where its employment has been attended with much success. It soothes pain and irritation, checks secretion, and acts also as a disinfectant. It should be applied *at once*—that is, without any preliminary cauterisation, if the sore when first seen has existed for more than a few days.

In ordinary cases the treatment as given above is all that is required. The patient should be enjoined to keep at rest as much as possible, to regulate his diet, and to avoid all sources of excitement. Inflammation of the glands in the groin is the complication mainly to be feared, but this can generally be avoided if the above directions are attended to.

The great objection to the use of iodoform is its characteristic smell, to which most patients object; where this is the case, the benzoate of bismuth will be found a most efficacious substitute. It occasionally happens that the chancroid is single and is so situated that it can be easily excised. If this is done with very strict antiseptic precautions, healing takes place by first intention, and in suitable cases excision constitutes a rapid method of cure.

Certain modifications in the treatment are rendered necessary by the situation of the sore and other circumstances. If, owing to phimosis, the ulcer cannot be properly exposed, no attempt should be made to destroy it by means of cauterants. Great care is necessary in applying these agents to sores in close proximity with the urethra in either sex; for the application might eventually cause a fistulous opening, or, in the case of ulcers situated near the orifice, the resulting cicatrix might give rise to more or less occlusion. In the treatment of chancres in females the greatest cleanliness must be enjoined. The carbolised lotion should be freely applied by means of a syringe to the vaginal mucous membrane. If cauterants are used, great care is necessary when the sores are situated on the walls of the vagina. Measures should be adopted to keep the parts as free from secretion as possible, in order to avoid multiplication of the sores, and this may be done by keeping the part well dusted with iodoform, benzoate of bismuth, or calomel and zinc oxide. The most common seat of soft sores in females is the mucous membrane lining the lower part of the inner surface of the labia majora. These parts are freely supplied with sebaceous and mucous glands, which secrete profusely under the irritation caused by the development of a chancre. Their secretion, mixed with the discharges from the sore, is apt to find its way to adjacent parts, viz., to the genito-crural cleft and perineum, and to give rise to new ulcers. These are liable to spread, especially in the perineum and around the anal orifice, parts not easily kept clean, and in which ulceration is painful, tedious, and difficult of cure. The menstrual discharge and the secretions of any existing uterine or vaginal catarrh also act as vehicles for the spread of the virus, and these latter require simultaneous treatment.

Treatment of Phagedænic Sores.—Prolonged immersion in hot water (at a temperature of 97°) is the remedy upon which most reliance can be placed. In severe cases it may be necessary to prolong the immersion for a considerable period. A few years ago I had under my care a patient in whom the good effects of this treatment were manifested in a remarkable manner. The case was one of soft chancres of the penis rapidly running into phagedæna. I applied nitric acid freely on two occasions, the patient being under chloroform, but the phagedæna continued and caused very severe pain. The patient was placed in the hot bath, when the pain soon ceased; opium was also administered internally in repeated doses. He was kept in the bath *night and day*, *for fourteen days*, the water being frequently renewed and the temperature maintained. Under this treatment the phagedæna soon ceased to spread, healthy action was set up, and the sore healed. So great was the relief afforded by the warm water that, during this lengthened period, the patient refused to leave his bath except for necessary purposes; for the pain returned after he had been out of the water for a few seconds. There were other circumstances worthy of notice connected with this case. Two months after the phagedæna an eruption of rupia appeared all over the body, not having been preceded by roseola or any other secondary manifestation. This, again, was followed, after an interval of three years, by symptoms of spinal disorder. I have already referred (see p. 30) to other cases in which early rupial ulceration was followed by symptoms of intra-cranial and spinal lesions.

In less severe cases the application of a solution of tartrate of iron (gr. 10—60 to ℥j.) will be serviceable. Another local remedy of great value is a solution of the permanganate of potash (gr. 10—80 to ℥j.), the strength proportioned to the severity of the case, and the lotion being applied every three hours. General treatment must of course be adopted. If the patient's surroundings be of an unfavourable character from a hygienic point of view, removal is absolutely necessary. Fresh pure air and free ventilation should, if possible, be secured in dealing with any case of phagedæna. Nourishing food, stimulants, tonics of various kinds, particularly quinine and the mineral acids, together with opium in doses according to circumstances, are all likely to be required in the treatment of these cases. Cod-liver oil may also be given, especially if there be any indication of tuberculosis. It is, perhaps, almost needless to add that mercurials in any form will only aggravate the mischief.

The serpiginous chancroid will only occasionally fail to yield to local treatment, and these exceptional cases are very often due to the co-existence of tertiary ulceration and chancroid. When this is the case, the exhibition of iodide of potassium will be found useful, and should be followed, when the ulceration has healed, by a mercurial course. If it is found that the iodide aggravates the mischief, a course of Zittmann's decoction will generally be found to stop the process.

When phimosis and phagedæna co-exist, slitting-up the prepuce should, if possible, be avoided; that is, the operation should not be performed until every other plan has been tried and found to be inefficacious. If the knife be used, extension of the phagedæna to the new wound, and a larger surface to be dealt with, will be the almost certain results.

TREATMENT OF PHIMOSIS AND OF PARAPHIMOSIS.—In cases of phimosis, due to inflammation of the prepuce, the result of soft sores, it is best to attempt to relieve the condition by keeping the patient at rest; by administering a purgative; and by injecting every few hours a weak carbolic acid lotion (ʒj. to ℥vj.) or bichloride solution (1 to 4,000) between the prepuce and the glans. If the swelling continues and the prepuce cannot be retracted, this latter must be divided, so that the sores may be exposed to view. There is of course some risk that the wound may assume the characters of the ulcer; but, on the other hand, if the phimosis be suffered to continue, the ulceration will certainly spread, and it may go on to such an extent as to perforate the prepuce (see Pl. II., Fig. 1). Besides, by causing retention of the pus, the phimosis may be the cause of suppurating buboes. If slitting-up the prepuce or circumcision is found necessary, the spreading of the ulceration to the freshly cut surfaces may be prevented by the free use of antiseptics before, during, and after the operation.

When paraphimosis co-exists with soft sores, and there is danger that the constriction will lead to gangrene of the glans, the best method of effecting reduction is to take the glans penis between the fingers and thumb, covered with a wet towel. After the part has thus been thoroughly compressed, and the blood squeezed out of it, the prepuce can generally be drawn forward without difficulty. If reduction cannot be accomplished owing to the presence of constricting bands, these latter must be divided with the point of a bistoury, care being taken not to injure the dorsal vessels of the penis.

Treatment of Buboes.—The two main objects to be attained in the treatment of buboes are to promote resolution, and to prevent suppuration. The treatment becomes more difficult when a deep-seated gland is involved, or when many glands are inflamed at the same time. On the other hand, when a single superficial gland becomes swollen and painful, the symptoms, as a general rule, readily subside under appropriate treatment. As stated in a former page, the inguinal glands are those which are generally affected; and as soon as pain and swelling are complained of in the groin, the patient must be kept at rest and in the horizontal position. A bag of ice should be immediately applied, and a saline purgative may be given. The diet should of course be reduced, and no stimulants should be allowed. The more superficial the affected glands, the more likely is this treatment to prove efficacious. If the swelling be deep-seated, suppuration may have commenced before the symptoms become very prominent. It is well, however, to begin with the treatment as given above. If it fail, and suppuration is clearly unavoidable, hot fomentations of boric lint should be constantly applied until it is judged fit to open the bubo. If the gland-swelling is seen before suppuration has taken place, the part may be painted with belladonna and glycerine, and frequent hot fomentations of boric lint applied, which in favourable cases may cause resolution. At the same time, very strict attention must be paid to the chancroid, as the earlier this is promoted to the stage of a healthy sore, the less chance there is of suppuration taking place in the adjacent glands. This is a point well worthy of attention, but is unfortunately very frequently neglected. If, in such a case, it be absolutely necessary that the patient should move about, a pad should be placed over the swelling and kept in position by a bandage. Plasters are not to be recommended.

The methods above described have for their object the promotion of resolution; other plans must of course be adopted if suppuration has taken place. The objects then to be attained are the completion of the process, the evacuation of the pus, and the healing of the abscess. The evils to be guarded against are, purulent infiltration of the connective tissue, great loss of substance, and tedious and prolonged suppuration. Gangrene and phagedæna are complications which seldom occur, but it is necessary to be prepared for them, and to avoid all procedures likely to cause them.

It must be borne in mind that the course of a suppurating bubo, after an opening has taken place or has been made, may differ materially from that of an ordinary abscess, inasmuch as the wound often closely resembles the sore which has given rise to the swelling. The method of opening is therefore a matter of some consequence. If the suppurating gland or glands are superficial, an incision by means of a curved bistoury into the centre of the swelling will, as a general rule, be all that is required, and this should be done as soon as fluctuation can be perceived, and under strict antiseptic precautions. The patient should always be in the recumbent position when the incision is made, which need not be large; the bistoury should be inserted perpendicularly to the surface, and withdrawn in the same direction after the parts have been sufficiently divided. The pus having been allowed to escape, a small piece of iodoform gauze should be inserted into the wound in order to prevent its too early closure and to promote drainage. Antiseptic dressings should then be applied. It frequently happens that the suppuration is progressive, one gland after another becoming affected. Frequent incisions will then be required; they should be no larger than is necessary for the evacuation of the pus. In other cases several glands are affected at the same time, and the suppuration extends to the inter-glandular connective tissue. Small openings should be made into every prominent part, and the wounds must be kept open with iodoform gauze, over which antiseptic dressings are, of course, to be applied. If portions of skin are obviously undermined, the incisions should be so made as to give free drainage, and the undermined edges should be removed. In these cases, it is a good practice thoroughly to curette the abscess cavity, removing all glands and tissues involved in the suppurating process. The wound is then swabbed out with solution of zinc chloride (40 grs. to 1 oz.), and packed with iodoform gauze. In favourable cases, where this treatment has been efficiently carried out, there will be little or no suppuration, healthy granulations will rapidly spring up, and cicatrisation will be quickly completed. It often happens that the first time the case is seen, the bubo is in an indolent condition. There may be one or several sinuses discharging thin unhealthy pus—this is especially the case when several deep-seated glands are involved—the pus is long in reaching the surface, it burrows in the connective tissue, and sinuses are apt to form in different directions. Such cases are often very obstinate, and they require careful treatment. The sinuses should be freely laid open, the unhealthy granulations thoroughly removed, together with any glands or remains of gland tissue, all undermined skin should be cut off, and the whole cavity well washed out with zinc-chloride solution. It is very important to lay open every sinus and its branches. The wound is then packed with iodoform gauze and a spica bandage applied. Rapid and good healing will then take place. If the track of a sinus runs close to the large vessels in the groin, instead of making an incision, a drainage tube should be inserted.

With regard to other methods of opening buboes, such as the use of caustics, aspiration, etc., they are mentioned only to be condemned. In cases of prolonged suppuration the patients are often anæmic and weakly, and therefore good food, tonics and stimulants are generally indicated. The healing process used frequently to require several months for its completion, but if the methods recommended above are followed, days may be substituted for months. As mentioned above, the wounds in some cases after incision closely resemble a large soft sore. When this is the case, it is known as virulent or chancroidal bubo, and is probably due not to the micro-organisms being carried by the lymphatic vessels, but to the wound becoming secondarily affected from the sore. If the antiseptic treatment has been thoroughly carried out, the chancroidal bubo never occurs. It may happen, however, that the bubo has opened naturally and become virulent before coming under treatment. In this case, cauterisation, antiseptic lotions and iodoform, supplemented in obstinate cases by continued warm baths, will give the best results.

Various solutions have been used for parenchymatous injection of buboes in order to abort them. Welander recommends benzoate of mercury, and uses fifteen to thirty drops of a 1 per cent. solution, but we have not had any personal experience of this treatment.

The idea naturally suggests itself that the quickest results in the treatment of bubo will be obtained by the immediate excision of the glands (under antiseptic precautions) when they become inflamed, and the closure of the wound by suture. It must be admitted that in suitable cases this method offers an efficient means of treatment, which is too seldom taken advantage of.

The complications to which open buboes are liable —viz., phagedæna, gangrene, and diphtheritis—must be treated according to the rules laid down for soft sores under similar circumstances. Any hæmorrhage which may occur must be dealt with according to the ordinary rules of surgery.

EXPLANATION OF PLATE III.

Fig. 1. Hard sore situated on the edge of foreskin.

Fig. 2. Hard sore situated on the corona, and on the inner aspect of foreskin.

Fig. 3. Hard sore situated on glans.

PLATE 3.

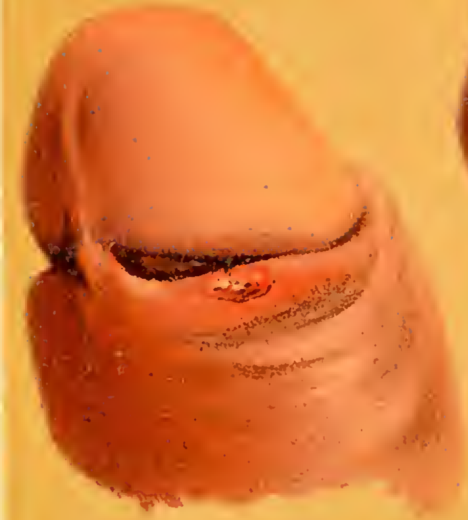


Fig 3.

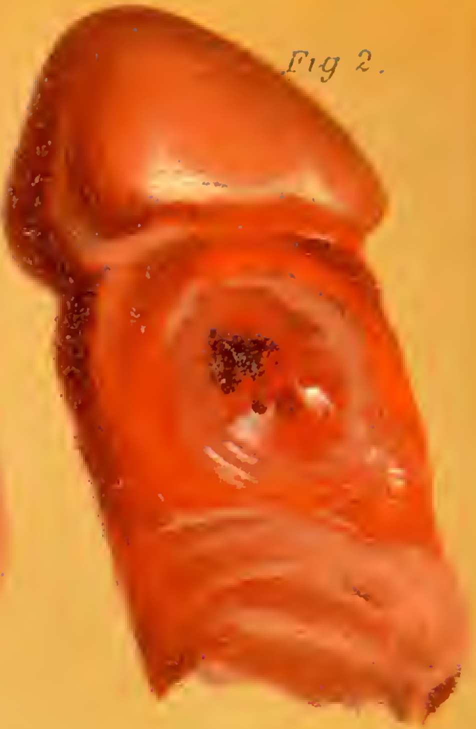


Fig 2.

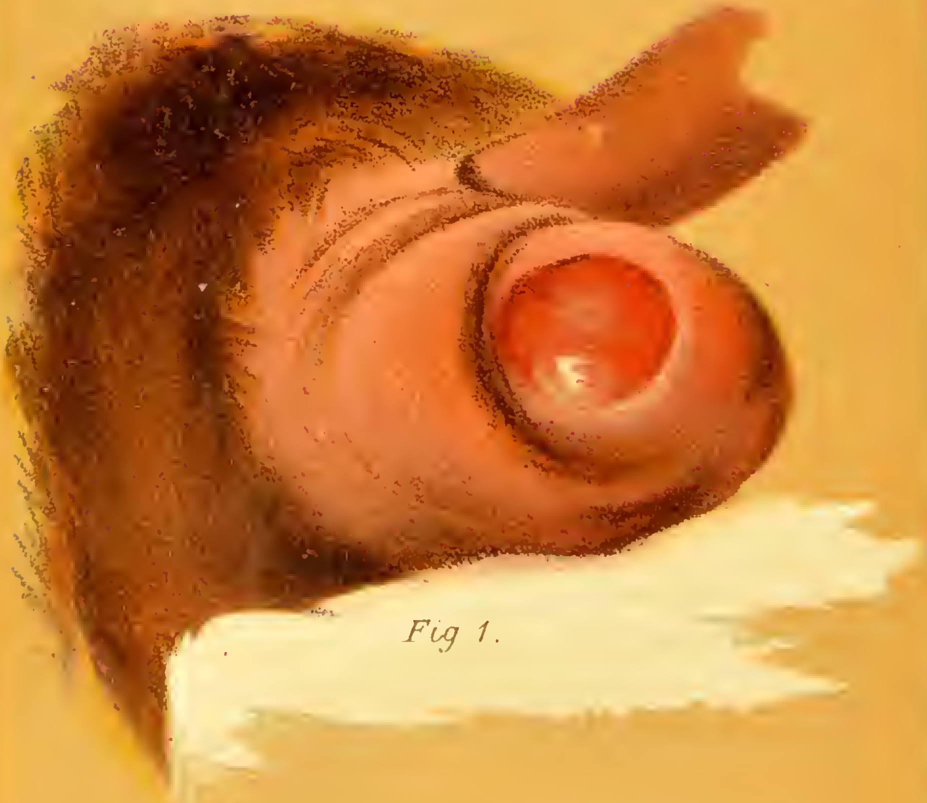


Fig 1.

Hanhart lith.

CHAPTER VII.

THE HARD OR INDURATED CHANCRE—THE PRIMARY SORE—THE INITIAL LESION—SYPHILIS.

Before describing the characteristic or typical initial lesion of syphilis, it should be mentioned that this is not always found, and that the induration is not always present, or is so very slight that it may be overlooked. Some maintain that syphilis may occur in the absence of any initial lesion, and such cases are sometimes described under the name *syphilis d'emblée.* If under this name is understood syphilis where the primary sore has not taken on the characteristic sclerosis, we shall, of course, admit the term, but we cannot allow that syphilis is ever present without an initial lesion, although its presence may be overlooked.

The indurated chancre, like the chancroid, may be found on any part of the body, but the genital organs are its most common seat (see Pl. III). In the male it most frequently occurs on the prepuce, on its outer and inner surfaces, but especially at or near its border; in the sulcus at the base of the glans; within the orifice of the urethra, and on the glans itself. In this last-named spot there is generally less induration than on the prepuce. In the sulcus at the base of the glans the induration is always very marked. Next to the genital organs, the lips and mouth are the most frequent seat of the hard chancre (see Pl. XIV). In women, the majority of these chancres are situated on the labia majora and minora, at the fourchette, and on the clitoris (see Pl. XVII., Fig. 1). The lesion is very rare on the vaginal mucous membrane; it is somewhat more frequent on the portio vaginalis uteri. Hard chancres are also occasionally found in the neighbourhood of the anus, and on the lower part of the abdomen, and with regard to other portions of the body, they are sometimes found on the nipple, and on various parts of the face and fingers.

The hard chancre is, in the great majority of cases, a single lesion; in this respect it differs very remarkably from the soft form. If several hard chancres are found upon the same person, the probability is that they have become simultaneously developed; for a sore of this character is not inoculable, as such, upon the subject of it.

The manner in which the primary lesion of syphilis makes its appearance varies in different cases. It may appear (1) in the form of a papule, which subsequently becomes more or less eroded, but does not ulcerate. (2) It may take the form of superficial erosions. (3) The disease appears in the form of an indurated spot, the surface of which ulcerates. (4) The edges and base of an ulcer, originally soft, become indurated (the mixed chancre). (5) Indurated or sclerotic œdema, found almost exclusively in women. In whichever way it commences, the period of incubation is usually a prolonged one. Its duration varied from eighteen to thirty-five days, in cases inoculated with the secretions of secondary lesions. When the infection takes place from a primary sore, the period of incubation is probably shorter, though in three well-authenticated cases it was found to be eighteen, twenty-three, and twenty-eight days respectively. Fournier gives seventy days as the longest period of incubation known to him; and I know of a case, beyond a doubt, of six months.

1. *The dry scaling papule*, particularly described by Lancereaux, is the rarest form which syphilis assumes on its first appearance, and is the one which has generally been observed in experimental inoculations. After an incubation of from two to three weeks, a sharply-defined papule makes its appearance at the point of contamination, usually having the form of a patch, one or more centimetres in extent, of a dark or brownish-red colour, round or oval, firm and elastic, and sometimes covered with whitish scales. There is very slight induration, and without proceeding to ulceration, it gradually loses its resistance and elasticity, diminishes in extent, and leaves behind it a slight violet-coloured or brown spot without any cicatrix.

2. *Superficial erosions.*—This, according to Bassereau, is the most frequent form in which primary syphilis occurs. Bassereau met with it in 146 out of 170 cases. It generally occurs on the internal surface of the prepuce in men and on the inner sides of the nymphæ in women. It commences in the form of a reddish spot, but slightly raised, dry and papular. Desquamation takes place, and subsequently some amount of ulceration, but there is little or no pain in the part. The spot is circular or ovoid, or more or less irregular in form. The surface of the ulceration is rose-coloured, smooth, and flat, or very slightly excavated. The induration is slight and superficial. The discharge is serous in character and scanty, but is apt to become purulent on the application of irritants. Cicatrisation is comparatively rapid, and leaves scarcely any traces, apart from the induration which disappears in the course of time.

From the slight degree of induration often present, and the clearly-defined edges, this form is often mistaken for chancroid.

3. The third variety is that in which the disease appears as *an indurated nodule*, the surface of which sooner or later ulcerates; when fully developed it forms the classical "Hunterian chancre." The ulceration here, is therefore secondary to the development of the induration, and in a few rare cases the latter has been noticed to be unaccompanied by any breach of surface. The edges are raised and rounded; the surface is smooth and covered with a little viscid secretion. The induration, as in the previous form, is usually hemispherical, but its shape varies considerably. The nodule, as before, can generally be pinched up between the fingers, and when fully developed, feels hard and elastic like a cartilaginous nodule, and so, more or less isolated from the surrounding parts. The degree of induration varies according to the seat of the lesion; situated upon the glans, it may be slight and spread over the floor of the ulcer, forming the parchment induration of Ricord. The subsequent course of the lesion resembles that of the fourth variety; small granulations appear and cicatrisation ensues. The induration persists for a longer or shorter period; and in some cases, the cicatrix, instead of being bluish-red or white, assumes a dark-brown or bronze colour, which, however, disappears in the course of time. The conversion of the various forms of induration into mucous patches has been occasionally observed, and especially in places where mucous surfaces are in contact.

4. *Induration of the edges and base of an ulcer, originally soft — The mixed chancre.* — The change takes place most frequently during the third week. The ulcer is then discharging pus, and its edges and

base are inflamed, but not indurated. In the course of a few days the appearances change; the ulcer looks less inflamed, is less deep, its secretion diminishes and becomes thinner and viscid. The floor becomes raised, loses its irregular appearance and looks flat; the margins become smooth, are continuous with the surface and are no longer undermined. Beneath the ulcer and around its border, a more or less hard substance becomes developed, the result being that the sore as a whole is raised, and its depth and circumference are lessened. The ulcer is no longer painful. After a sore, especially if situated on the prepuce, has assumed these characters, it can be readily taken up between the fingers and isolated from the adjacent tissue. The semi-cartilaginous hardness is at once felt. Unless irritation is set up, the surface of the ulcer becomes more and more smooth and glistening. The discharge gradually diminishes, until the sore looks almost dry. Cicatrisation takes place, and the surface is quickly covered with a thin pellicle. The process is aided by the progressive development of the induration which tends to diminish the secreting surface. The induration remains, and may even increase, after the cicatrisation is complete. The hard nodule can then be readily felt. Its surface is smooth and shining; the pellicle covering it is very thin and adherent, and is sometimes, but by no means always, marked by a small depression, which indicates the seat of the ulceration. This latter may have been so slight as to leave behind it a cicatrix so minute as to be almost imperceptible.

The induration varies considerably in different cases, as regards its extent and duration. It is for the most part roughly hemispherical in shape—*i.e.*, flattened on the surface, while its convexity projects into the subjacent tissues. In other cases the induration takes the form of a thin disk, let in, as it were, among the softer structures. If the mass be of large size it may be either raised above the surrounding level, or less prominent, but spread over a considerable area. As a general rule, it is bounded by a sharp and well-defined border. With reference to its duration, this varies exceedingly in cases left to themselves. It often lasts for several months; instances have been observed in which it persisted for several years, and it may remain for an almost indefinite period. Its duration does not appear to depend upon its amount. In some cases after the sore has apparently healed, the cicatrix gives way and ulceration is again set up. This is the so-called relapsing chancre (chancre redux). It may occur a long time after the primary infection, and is often due to fresh intercourse; but it does not mean fresh contagion. It generally disappears quickly. The ordinary course, especially when mercury is administered, is for absorption of the induration to take place. This process gradually continues, the induration becomes less and less firm, and the nodule diminishes in size until its existence can no longer be detected.

5. *The indurated or sclerotic œdema* is a rare form of initial lesion generally only found in women on the labium majus, and much more rarely still on men on the prepuce or scrotum. The virus enters by some abrasion or crack which rapidly cicatrises; this is followed in about three weeks by a painless slowly-increasing swelling of the part involved, the whole being of a firm and elastic consistence, in some cases almost approaching the cartilaginous feeling of the typical primary sore. Although the point of entry of the virus can occasionally be detected, from its being developed as a

typical induration, yet in most cases the indurated œdema is the only lesion to be found.

The hard chancre, in any of its forms, may be attacked by gangrene, by sloughing, or by phagedæna. These complications have been already referred to in the description of the soft sore, in connection with which they are more frequently seen. It sometimes happens that the primary lesion of syphilis is in the form of a phagedænic ulcer. Phimosis and paraphimosis are also occasional complications of the hard sore.

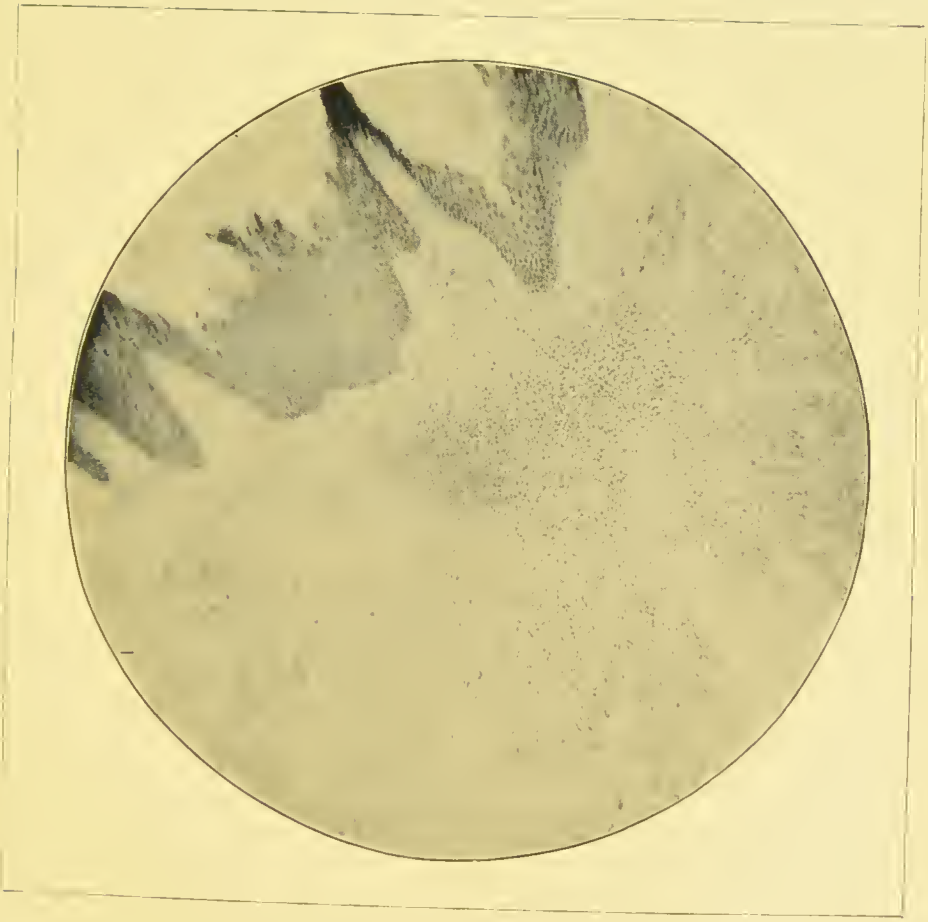
The various forms assumed by the primary manifestations of the syphilitic poison may, in part at least, be explained. It seems probable that the differences in some measure depend upon the nature of the medium in which the contagious particles are suspended or contained. If this medium be pus or purulent fluid, it will exhibit irritative properties, causing more or less inflammation, with swelling at the point of contamination. Ulcerative destruction will rapidly set in, and an ulcer becomes developed, in the borders and base of which induration appears as time goes on. A syphilitic sore of the fourth variety is then presented. If, however, the syphilitic poison is contained in a medium devoid of irritative properties, there will be no signs of irritation at the affected spot, but in the course of a few days or weeks a papule or nodule will become developed. This will present the appearances described as characteristic of the third variety. In the case of the superficial erosions, it may be supposed that the syphilitic poison becomes implanted upon an excoriation, either previously existing or caused during the act of copulation. If the secretion in which the virus is contained be of a non-irritative character, little or no ulceration will ensue, the excoriation disappears, and a considerable period may elapse before any nodule or other sign of induration is manifested. If the breach of surface is somewhat more decided in character, the sore will tend to assume the appearance of a soft chancre, induration, as before, setting in at a later stage.

It does not appear that the subsequent course of the disease depends in any way upon the form assumed by the primary lesion. There is, however, no doubt that individual peculiarities, and especially the health and habits of the patient, play an important part in determining the severity or otherwise of the secondary manifestations.

THE MINUTE ANATOMY of the hard sore has been studied by Kaposi, Caspary, Auspitz, Unna, and others (see Pl. IV.). The following are some of the results of their investigations. The anatomical conditions vary according to the stage of the induration. In a well-marked specimen—viz., a characteristic ulcer with a typically indurated base—the surface on section will be found to be pale red in colour, not containing much blood, uniformly compact, smooth, prominent, and of a firm elastic consistence. Perpendicular sections under the microscope show small cell infiltration of the papillæ and throughout the corium, uniform in character and closely distributed. This infiltration has a somewhat abrupt margin at the sides and below; the cells are embedded in a reticulum formed by the original fibres of the cutis. On the surface of the ulcer, the network and the cellular deposit are irregularly exposed. Numerous isolated nuclei, small shrivelled cells, and other similar structures are also found. At several points on the surface of the ulcer, there are isolated patches of epidermis and rete lying on the surface of the infiltrated corium. At other points there are remains of

EXPLANATION OF PLATE IV.

Section of hard sore, showing loss of epithelium, destruction of papillæ, and small cell infiltration of the corium.



the rete, and signs of the papillæ, the limits of each being more or less obliterated. The part infiltrated with cells is but scantily supplied with vessels, the walls of the latter are considerably thickened and their calibre is much reduced.

Auspitz and Unna attribute the induration principally to the connective tissue growth about the blood-vessels; and in addition, they describe a large increase in thickness of the *rete*, with prolongations downwards from the under surface of this, forming long processes, or becoming detached, forming isolated blocks of epidermic cells, surrounded by the small cell infiltration. As this cell infiltration increases, the epidermic layer is gradually invaded, and passing through the *stratum lucidum* and corneous layer it appears upon the free surface.

Diagnosis of the Hard Chancre.—The symptoms to be relied upon are the induration of the base and margins of the sore, and the induration of the lymphatic glands in the vicinity, this latter being the most certain sign. The situation of the sore and the history of its development aid the diagnosis. As a matter of course a hard chancre, situated on the genital organs or on the lips, is more readily diagnosed than one situated elsewhere. With regard to the induration itself, this, in the large majority of cases, is sufficiently characteristic. It is, however, true that chancres presenting little or no induration are occasionally followed by constitutional symptoms, but such cases *are very rarely met with* (see p. 46). It is generally asserted that hard sores are comparatively uncommon on the female genital organs, and that the soft sores on these parts are often followed by constitutional symptoms. There is, however, no real basis of facts for these statements. The induration is often so slight as to be overlooked;

it is sometimes so thin as to resemble a layer of parchment. Such induration is, of course, far less easy to discover on the vaginal walls than on the prepuce, where the sore can be taken between the thumb and finger. Besides this, a soft sore discovered on the labia may be regarded as the only lesion present, in cases in which a co-existing induration or papule on another portion of the genital organs is overlooked. A typical induration, situated in a part accessible to the touch and where the skin is lax, can be taken up between the fingers and isolated. When the hardness is due to inflammation (set up perhaps by the application of caustics or other irritants) it is of a more diffused character and tends also to subside. A soft chancre situated on the internal surface of the prepuce, near the base of the glans, is particularly liable to inflammatory induration. It may for some time be impossible to decide as to the true nature of the sore in such a case; but if glandular induration be absent, a favourable prognosis may be given. The hard chancre is generally single; its secretion is scanty and non-purulent, unless the sore be irritated; it is either non-inoculable upon the patient, or it gives rise to a sore resembling a soft chancre, if the sore has been irritated and the secretion is mixed with pus-cells. The induration is unattended by pain, unless inflammation is set up by the action of irritants, etc.

DIFFERENTIAL DIAGNOSIS OF THE HARD CHANCRE.—The differences between the hard and the soft sore have already been indicated. There are a few other lesions, occurring on the genital organs and lips, which more or less resemble the hard chancre. The most noteworthy of these are malignant disease, boils, and certain other pustular eruptions. A slowly developing cancerous growth on the prepuce or labia, may, for a time at least, simulate the initial stage of syphilitic induration. Epithelioma of the vulva sometimes closely resembles a hard sore. The microscope in such a case may aid the diagnosis, but the nature of the lesion will become quite obvious as time goes on. Infiltration due to carcinoma tends to spread in all directions, and is succeeded by disintegration of tissue and ulceration. The surface of the ulcer is not smooth and velvety, but more or less irregular, villous, and papillated. The diagnosis when the initial lesion occurs elsewhere than on the genital organs or lips may present much difficulty. In the case of an ulcer of the cheek, occurring in an old man, the lesion was regarded as due to an entirely different cause until an eruption of syphilitic roseola indicated the true nature of the case.

Furuncular eruptions on the labia and lips sometimes give rise to nodular formations, which subsequently ulcerate. Their number and the pain they cause will serve to distinguish them from syphilitic induration. Small chronic ulcers on the labia, due to boils, more or less closely simulate syphilitic induration, but they are not associated with any peculiar condition of the glands.

TREATMENT OF THE INDURATED CHANCRE.—The general treatment of syphilis will form the subject of a separate chapter; but directions for the treatment of the more prominent lesions will follow the description of the symptoms. In considering the treatment of the indurated sore, the question as to whether any of the so-called abortive measures are useful or the reverse, is one of considerable importance. Various methods have been suggested for destroying the induration, and some are still practised. Excision by means of a scalpel or pair of scissors has its advocates, while others employ various caustics of a more or less potent character. My own views may be summed up by stating once for all, that I place no reliance whatever either in excising an indurated sore, or in attempting to destroy it by any cauterant. My firm belief is that the induration is the local manifestation of the constitutional infection, which would continue to develop itself even if it were possible to remove every vestige of the so-called primary lesion. The induration, in my opinion, is a symptom of the previous and complete contamination of the system. It does not fall within the scope of this work to discuss minutely the points on which much controversy still exists, but with regard to the so-called abortive treatment of the indurated sore, it must be allowed that several striking instances of its apparent efficacy have been adduced by good authorities. The advocates of this practice, however, admit that, if an indurated ulcer situated, for example, on the prepuce, be freely removed with knife or scissors, the *general* result is that the induration reappears in the margin of the wound made by the incision, to be followed in due course by the ordinary constitutional symptoms. It is, however, asserted that in a smaller number of cases, the excision is not followed by any return of the induration or by any appearance of constitutional symptoms. The induration is therefore regarded, by those who practise excision, not as a local manifestation of the constitutional taint, but as a local lesion in which the syphilitic poison increases or becomes developed, and from which it is conveyed to the glands and other parts of the body. Some of those who adopt this theory go so far as to say that *excision of the sore is not contra-indicated by swelling and induration of the lymphatic glands.* My own opinion is that the glandular affection is the most important sign of the nature of the case. I admit that absence of induration in the base and edges of the sore does not *absolutely* demonstrate its non-infective character, but I maintain that such absence in the very large majority of cases justifies such a conclusion. If, however, I meet with a case in which induration is absent from the parts surrounding the sore, but the glands in the groin stand out and are hard to the touch, I entertain no doubt that the patient is the subject of syphilis. It is impossible to reconcile the conflicting statements with regard to the efficacy of the so-called abortive treatment. It is, however, a fact that most of those who once practised it are now convinced of its inefficacy. The advisability of cauterising all soft sores seen within four or five days of their appearance has been already mentioned; but the recommendation is not intended to apply to any sore *in which the slightest traces of induration are manifest.*

Mercury is the main agent to be relied upon in treating an indurated sore; and its use should be commenced as soon as the diagnosis is made. It is unadvisable to wait for the development of additional symptoms. On the whole, the most convenient way of administering mercury is by the mouth, and the best preparation is the Pil. Hydrargyri. Of this, gr. iii.—v. combined with Opii gr. $\frac{1}{4}$—$\frac{1}{2}$ should be given night and morning, until the effects of the mercury are perceptible on the gums. The patient must of course be carefully watched, and the dose reduced, or the medicine discontinued for a time, should its action become too great. Salivation must, if possible, be avoided. The course of mercurial treatment must be a prolonged one; to be thoroughly efficacious, it should extend over two years, the object being to produce, to their full extent, the alterative effects of the remedy. The Lotio Nigra or an ointment composed of equal parts of vaseline and Unguent. Hydrarg. should be applied to the sore, which usually heals without difficulty.

The above is a brief description of the ordinary method which the author adopts in treating an indurated sore; but various circumstances may necessitate certain modifications. There are also other ways in which mercury may be administered, and various other preparations may be given by the mouth. Inunction with Unguent. Hydrargyri is a very efficacious method, and it has the advantage of not producing irritation of the bowels. On the other hand, the frequent application is troublesome, and causes the skin to appear dirty, and patients soon get tired of it, and can scarcely be persuaded to persevere with its use. Other preparations used for inunction present similar disadvantages. The vapour bath is also troublesome, and more or less inconvenient. It is, however, useful, as will hereafter be pointed out, in some forms of syphilitic affections of the skin. In some cases the hypodermic injection of the sozoiodol of mercury or of sal alembroth presents advantages over other methods of administering the drug, and this plan of treatment will be more fully discussed later on. With regard to the iodides of mercury, they should be reserved for later stages. If, as generally believed, iodine acts as an eliminant of mercury, there can be no advantage in using it when the production of the constitutional effects of the latter drug is the object to be attained. Further details with regard to the administration of mercury will be given in a subsequent chapter. It must of course be borne in mind that particular care is necessary in dealing with tubercular and cachectic individuals affected with syphilis. Any kind of active mercurial treatment is certain to do more harm than good, and, according to the special circumstances of the case, it will be necessary either to abstain altogether from using the drug, or else to administer it tentatively with the greatest caution and in very small doses.

With regard to the time at which the mercurial course should be commenced for the treatment of syphilis in its earliest stages, there is a marked divergence of opinion. Some surgeons think it more expedient to defer specific treatment (*i.e.*, mercurial) until some other manifestation takes place, while others commence the administration of the mercury immediately induration is detected. As will appear from what has been said above, the author's opinion is decidedly in favour of the latter practice. If mercury is to be regarded as in any sense an antidote or specific for syphilis, it is certainly advisable to lose no time in bringing the system under its influence when once the diagnosis has been made. Its early administration, even if it does not prevent the development of general symptoms, certainly tends to mitigate their severity. It may therefore be stated that, as a general rule, the earlier mercury is administered the better are the prospects of ultimately subduing the disease. And this proposition may be maintained to be correct, whatever view be adopted as to the real significance of the induration.

Glandular Induration connected with the Hard Sore.

It has been already stated that induration of the lymphatic glands in the neighbourhood of a chancre is to be regarded as decisive evidence of the infective nature of the lesion. The induration referred to is an almost constant symptom: statistics show that it is absent only in about 1 per cent. of the cases in which a sore is followed by constitutional manifestations. The lymphatic vessels connecting the glands with the sore are likewise frequently indurated, but this symptom is sometimes absent, and is often inconspicuous.

Inasmuch as the genital organs are the most frequent seat of the chancre, the inguinal glands are those in which induration most frequently occurs. When the chancre is situated on the lips, the submaxillary glands are affected, and when the hand is the seat of the lesion, the gland near the internal condyle of the humerus and those in the axilla become enlarged and indurated. With regard to the time at which the glandular swelling commences, this may be stated generally to be about seven days after the appearance of the primary sore. A single gland is first affected, and the mischief gradually spreads to others in the immediate neighbourhood. The swelling may appear in one or both groins; in the former case it is generally, but by no means always, on the same side as the original lesion. It comes on gradually, and is unaccompanied by pain or other signs of inflammation. The glands are felt to be swollen and firm; pressure causes little or no pain, and the skin is freely movable over the tumours. The swelling varies in extent according to the number of glands implicated. It generally forms a sort of chain or bundle, in which the separate glands can be more or less clearly distinguished. When several glands are severely implicated, they form a large irregularly-shaped tumour. It seldom happens that the patient complains of any pain or discomfort in moving the limb. A feeling of tension in the groin is generally all that is noticed. In very stout persons it may be difficult to detect the swollen glands. In tubercular subjects, on the other hand, the swelling is usually large and prominent.

This glandular enlargement has a very protracted course. It remains stationary for several months and then slowly disappears. Fatty degeneration, followed by absorption, is the ordinary process, but chalky deposits sometimes occur. Suppuration very rarely happens, except where tubercle co-exists, but it may be induced by violent exercise or other sources of irritation, such as mixed chancre. In scrofulous subjects the indurated glands are especially liable to become inflamed, and suppuration is not uncommon, and when it does occur its course is always very tedious. Redness of the skin and its adhesion to the swollen glands are the first symptoms. The patient complains of pain and tenderness, the redness and swelling increase, and fluctuation can be detected at several points. If an incision be made a thin serous fluid escapes. Sinuses are very apt to form, and if these are laid open, portions of the enlarged glands are often seen in the course of the wounds. The sinuses may extend for a considerable distance from the inguinal region, and the semi-purulent fluid may find its way into the crural canal, and penetrate deeply between the muscles on the anterior aspect of the thigh.

In non-tubercular subjects, as above said, suppuration is extremely rare. In this respect the glandular enlargement connected with the hard sore contrasts very decidedly with the acute adenitis which so often accompanies the soft chancre. If suppuration has taken place, it is almost certain that there will be no constitutional manifestations, whereas the induration is pathognomonic of constitutional infection.

There can seldom be any difficulty in the *diagnosis* of glandular induration of syphilitic origin. The *treatment* is the same as that of the chancre to which the induration is due. Under the continuous administration of mercury the swelling gradually subsides, but traces of it often remain for considerable periods.

CHAPTER VIII.

CONSTITUTIONAL SYPHILIS.

SYPHILITIC FEVER—AFFECTIONS OF THE SKIN—ROSEOLA, PAPULES, PUSTULES, SYPHILITIC TUBERCLES, GUMMATA, RUPIA, ETC.

IN the sketch given in a preceding chapter of the ordinary course and symptoms of syphilis, reference was made to the so-called "second incubation" as being a peculiar feature of the disease. This process takes place in the interval between the development of the induration and the production of symptoms, some of an objective, others of a subjective character. The term "secondary" is used to designate those symptoms which are considered to result from the saturation of the blood by the syphilitic virus, and which appear in a more or less regular order, in parts of the body at a distance from the original lesion. The first manifestation takes place on an average, in the seventh week after the development of the induration. Certain symptoms, however, occur even during this interval, but they are generally of a slight character, and are often unnoticed by the patient. The eruption of a specific exanthem is usually regarded as the first manifestation of secondary syphilis. This in many cases is either accompanied, or speedily followed, by an affection of the mucous membrane of the throat.

But before any skin-affection appears, glandular swelling and induration can generally be detected in various parts of the body. The so-called indolent buboes have been already described. Other glands, however, besides those in the groins, exhibit signs of irritation. The glands at the posterior border of the sterno-mastoid muscle, the posterior occipital, and the posterior auricular glands are apt to become swollen, and the same appearance may sometimes be noticed in a gland situated just above the inner condyle of the humerus. It may be presumed that many other lymphatic glands in the body are similarly affected; the cervical glands and the gland near the elbow are particularly accessible to observation. The submaxillary glands are less frequently affected at this stage. This enlargement of the glands has no necessary connection with any eruption upon the skin; it is, therefore, not due to a sympathetic irritation, for the glands begin to swell before any eruption appears, but it generally happens that the swelling becomes more marked during the development of the cutaneous affection, and in the neighbourhood of lesions of the mucous membrane. The adenitis, therefore, may be looked upon as the effect of a general specific intoxication. The glandular swelling remains for an indefinite period; alterations in size occur from time to time, and diminution is generally observed when the patient is under the influence of mercury. This general adenitis varies in different individuals, both in extensiveness and intensity, due in a large measure to individual disposition. As an aid to diagnosis, this general glandular enlargement is often invaluable. Taken in connection with other signs of syphilis present, a very positive diagnosis may often be given; still its absence is not necessarily a negative proof, as at the time of examination it may not be present, especially during the later period of the secondary epoch, whilst it has no significance in the tertiary stages. Again it must be remembered that enlargement of glands may be due to other causes, such as tubercle, Hodgkin's disease, etc., but the differential diagnosis, as a general rule, does not present any difficulty.

Another symptom which sometimes occurs during this interval may be described as a general feeling of ill-health. The patient complains of a sense of discomfort, weakness, and lassitude; the skin is pale and dry, and the eyes are dull and heavy-looking. Sleeplessness and loss of appetite are occasionally observed. These symptoms are most marked in debilitated subjects; they are often absent or extremely slight in persons previously in good health. Pains resembling rheumatism are sometimes felt in the joints and long bones. The pains are not constant or confined to any one spot. They are generally worse at night, and cause restlessness and discomfort. The affected joints are sometimes, though rarely, swollen at this period. Headache is more common. It may amount only to a feeling of dulness or heaviness, or it may be severe, as if the head were being forcibly compressed. Like the pain in the limbs, the headache is worse at night. The scalp is sometimes tender on pressure, so much so that the patient is unwilling to place the head on a pillow. In other cases the pain is not increased by pressure. Vertigo, dizziness, indistinctness of vision and hearing, are sometimes observed, together with anæmia.

Associated with the above symptoms, a more or less decided febrile condition is frequently noticed. This is manifested by elevation of temperature and increased frequency of the pulse. This eruption-fever of syphilis has been compared with the febrile symptoms of the acute exanthemata, but it differs from the latter in having a longer period of incubation and a shorter prodromal stage. The febrile symptoms are rarely severe; in some cases they are continuous, in others somewhat remittent. They precede by a few days the appearance of the eruption, and generally subside when the latter is fully developed. The increase in temperature is accompanied by an aggravation of some of the symptoms previously mentioned; neuralgic pains in the head and limbs are generally complained of, exacerbations taking place towards evening. In some cases the symptoms resemble those of intermittent fever, but the cold stage is generally only slightly marked, or is represented by a transient chilliness. The erythematous syphilitic eruptions are those which are associated with the most marked febrile symptoms. On the other hand, the development of the papular forms is not accompanied by fever. Pain and swelling in certain joints, co-existing with the febrile symptoms, may cause the affection to be mistaken for acute rheumatism, and a sudden outbreak of the eruption, with high febrile symptoms, may simulate an attack of measles; but in both cases the subsequent course of the symptoms will indicate the true nature of the complaint.

When the fever assumes an intermittent form the symptoms may be attributed to the influence of malaria. Such a mistake could scarcely occur if proper inquiry were made into the history of the case. An instance of this kind, however, came under my notice some time ago. A gentleman consulted me for soft sores on the penis; these healed up in about three weeks. Two months afterwards he contracted an indurated sore, for which mercury was at once administered. After an interval of some weeks he was seen by another surgeon, who discovered febrile symptoms, which he was led to suppose were of malarial origin, the patient having spent some time in a malarious district during the previous year. This diagnosis was confirmed by two celebrated physicians who were called into consultation. Quinine was administered for two months without effect, and the patient was advised to go to a German bathing-place. While there several lumps appeared on his forehead. He consulted me on his return, and I found several well-marked nodes on the forehead and vertex, and a rupial rash over the body generally. He complained of acute pain in the shins and head, and of pains like those of chronic rheumatism in other parts. He was much reduced in flesh and strength; there was profuse sweating at night and other indications of debility. I prescribed cod-liver oil, and the iodide of potassium, gr. v., every four hours, with very satisfactory results.

Febrile symptoms, generally of the remittent type, also accompany later stages of syphilis—*e.g.*, the development of pustular eruptions and various syphilitic affections of the mucous membranes. Syphilitic erythema of the fauces, when severe, is attended with marked elevation of temperature. Syphilitic fever occurs more frequently in females than in males, and is generally more manifest in those cases where treatment has been delayed or is inefficacious. When mercury is administered, the temperature soon becomes reduced to the normal degree, and sometimes falls below it.

The febrile symptoms sometimes continue after the appearance of various eruptions on the skin and mucous membranes. In such cases they are generally characterised by their marked severity, and accompany every fresh manifestation of the disease. A decided rigor, lasting perhaps an hour, may occur every evening, and be followed by high temperature and perspiration. These cease after a few days, but reappear simultaneously with fresh eruption on the skin or in the throat. Gastric disturbances and signs of nervous derangement are occasionally superadded. There is considerable difference of opinion as to the frequency with which syphilitic fever occurs. It is probable that there is an elevation of temperature in all cases, but that it is often so slight as to be overlooked. In nineteen cases which were closely observed, only in one could no febrile movement be detected; in twelve the highest temperature noticed was 100·4°; in five, 102·2°; and in one a temperature of 104° was reached.

The interval that exists between the reception of the contagion and the appearance of an eruption on the skin or mucous membrane may be lengthened or abbreviated. When mercury is given for the primary induration, and the patient can be placed under favourable circumstances, the subsequent appearances are retarded, and their intensity in many cases is much reduced. On the other hand, if mercury be withheld, and the patient's circumstances be unfavourable, the secondary symptoms are earlier in their appearance and more severe in their character.

Syphilitic affections of the skin may be classified in various ways. There are, in the first place, two principal groups:

I. The exanthematous syphilides, connected with the earlier stages of the disease.

II. The later or tertiary affections.

The first group comprises the erythematous, the papular, the pustular, and the squamous syphilides. The second includes the tubercular, ulcerative, and the gummatous lesions.

No part of the skin is exempt from the manifestations of syphilis, but certain eruptions appear to have a predilection for different parts of the cutaneous surface. Thus syphilitic erythema generally commences on the skin of the abdomen, less commonly on the thorax, face, and backs of the hands. The papular syphilide affects the sides of the trunk, the abdomen, and the back. The pustular forms are generally most marked on the scalp and face, and the squamous affections occur most frequently on the elbows and knees, on the palms of the hand and soles of the feet.

Syphilitic affections of the skin, of the secondary period, present certain peculiarities common to the entire class, and which serve, in a measure, to distinguish them from other cutaneous eruptions. The peculiarity to which most importance has been attached is their *colour*. This, in the majority of cases, is first pinkish and soon brownish-red, and afterwards of a more or less decided coppery or raw ham tint. The primary redness is less marked than that of the ordinary exanthemata. It is most distinct on the dependent parts of the body, and in recent and superficial eruptions. The peculiar coppery colour of syphilitic skin diseases was recognised as far back as the sixteenth century, and was regarded as a pathognomonic sign. It is especially characteristic of the later and more severe eruptions, which develop slowly and affect the deeper structures of the skin. As the eruption subsides, the coppery tinge fades and passes into a yellowish-brown or grey discoloration. On the other hand, it sometimes happens that disappearance of the eruption is followed by loss of the normal pigment, and the substitution of white patches. The coppery colour is due to dilatation of capillaries and to minute extravasations of blood, and to subsequent metamorphosis of the colouring matter; it is especially marked in syphilitic eruptions occurring in debilitated subjects. In such patients large coppery-red stains are often seen on the lower extremities. The scars of syphilitic ulcers also assume this colour.

Polymorphism, as it is termed, is another peculiarity of these affections—that is to say, several different forms of eruption often occur simultaneously on the same patient; the new forms showing themselves before the older ones have disappeared. Thus, roseolous patches often co-exist with papular and pustular eruptions.

A third peculiarity of syphilitic eruptions is their tendency to assume a *circular* or *curved arrangement.* This latter is, however, by no means general, and it is more marked in relapses than in the earlier manifestations. It is also more characteristic of the papular and tubercular eruptions.

The *scales* which become detached from the milder syphilitic eruptions are thin, and of a dull whitish or whitish-brown colour. They appear first in the centre of the efflorescence, and never at its periphery, and they are not detached in such quantities as in ordinary psoriasis. The *crusts* of syphilitic pustular and ulcerative affections are formed by the desiccation of serum, pus and débris of tissue. They are yellowish-brown or dark brown in colour, thick, and dry. The thickness decreases from the centre towards the periphery, where the crusts are surrounded by a brownish-red, firm circle of infiltration. Those of syphilitic rupia are decidedly vaulted or conical; they form several layers and are very dark in colour.

Absence of itching and of pain is a negative characteristic of syphilitic eruptions. Some amount of itching may, however, be complained of during the acute stage of a copious eruption, and also when desquamation takes place, and when the scalp or chin is affected. Moist papules near the anus and on the genital organs cause more or less irritation. Syphilitic skin-eruptions are rarely painful unless ulceration be present.

The *chronic course* of these eruptions, their *tendency to relapse*, and the *symmetrical distribution* of the earlier lesions are the remaining peculiarities which require notice.

The syphilides of the tertiary period are non-symmetrical, and their seat is often determined by a pre-existing local irritation. The tissues are more infiltrated than in the secondary syphilides, and there is a tendency to ulceration. The lesions present only one type, the gummatous infiltration.

In considering more in detail the skin-eruptions of syphilis it will be convenient to take them in the order of the anatomical classification. The following table by Crocker is modified from that originally proposed by Cazenave, and is based upon pathological considerations:—

I. Circumscribed hyperæmia, with slight infiltration:—

- Macular ... ... Erythematous.

II. Marked infiltration of the papillary body:—

- Papular, variously modified... ...
  - 1. Dry papular.
  - 2. Squamous, patchy, or circinate.
  - 3. Lenticular or large papule.
  - 4. Moist papular or tubercular.

III. Especial implication of the hair follicle, or its immediate neighbourhood:—

- Lichenoid of progressive severity
  - Miliary papular or lichenoid... ...
    - Large.
    - Small.
  - Miliary papulo-vesicular.
  - Miliary papulo-pustular.
  - Acneiform.

IV. Infiltration with sub-epithelial suppuration and superficial ulceration:—

- Varicelliform and Varioliform.
- Ecthymatous ...
  - Superficial.
  - Deep.
- Bullous ... ..
  - Rupia.
  - Pemphigoid.

V. Gummatous infiltration with tendency to ulceration:—

- Tubercular syphilides.

VI. Extravasation of blood-constituents:—

- Pigmentary syphilide (pigment only).
- Purpuric (blood).

General Pathological Anatomy.—The general features of the anatomy of the syphilides consist in—

I. A dense infiltration, circumscribed at first, of small round cells enclosing the blood-vessels. This infiltration starts in the papillæ, and later on the trabeculæ of the corium are affected.

II. The infiltrated cells undergo fatty degeneration, and re-enter the organism by absorption, or end in suppuration. They never become organised into connective tissue.

III. Both the infiltration and retrogression start from the centre; the borders of the lesion are consequently the more recent part. Such is the reason for the circinate form frequently seen.

Roseola syphilitica (erythematous or macular syphilide, syphilitic exanthem) is the most common form of syphilitic affections of the skin, and, as a general rule, the first of these manifestations. It is often inconspicuous, and is frequently overlooked owing to its want of subjective symptoms. It generally appears about six or seven weeks after the primary sore. Its appearance is usually gradual, but it may be suddenly produced by a hot bath, violent physical exertion or any cause which gives rise to cutaneous capillary congestion. It consists of irregularly rounded hyperæmic spots, about a third of an inch in diameter and varying in colour from a pale rose-pink to a purple or reddish-brown hue; the eruption being often preceded by febrile symptoms and pains resembling those of rheumatism. The macules are sometimes confluent, and, as a rule, they do not all appear at the same time, but in successive crops, so that a week or ten days may elapse before the eruption is at its height. Syphilitic roseola nearly always begins on the abdomen; it then shows itself on the chest and arms, and lastly on the legs. The face is rarely attacked, except in patients, such as hall-porters and others, who are particularly exposed to winds and draughts. In warm climates, the roseolar eruption, wherever it appears, is always very distinctly marked. Most of the spots are on the same level with the skin, but some are often more or less elevated, in which case they resemble urticaria. If left to itself, the eruption lasts for some weeks, assuming a darker hue, and then gradually fading into a light-brown stain, which persists after the rash itself has gone, but desquamation is rare. Owing to the gradual development of the eruption, fresh red spots are often seen co-existing with others of darker and lighter shades. The roseola is often the only cutaneous affection that appears in the course of syphilis. It may recur more than once, the eruption in that case being less copious, paler in colour, and more prone to assume a circinate form. A roseolar affection of the mucous membrane of the soft palate and tongue is occasionally observed.

Minute Anatomy (see Pl. V., Fig. 1). — The microscopical anatomy of the syphilitic macule has been investigated by Biesiadecki, Kaposi, Neumann, and Crocker. The latter states that the change is confined almost entirely to the upper layers of the corium—mainly the papillary—in a rather sharply-defined area. The epidermis is raised as a whole; but the cells of the horny layers and rete are normal as a rule, except where the effusion is greatest and stretches them. Here there may be some elongation of the lowest cells, which may even be so disturbed that the defined line at the junction of the epidermis and papillary

EXPLANATION OF PLATE V.

Fig. 1. Minute anatomy of part of a macular syphilide.
(*After Crocker.*)

a Connective tissue bands of the corium separated by the cell-effusion, *b*, *b*, which is chiefly in foci in the course of the vessels. In the upper part of the corium the individual fibres are separated by the inflammatory effusion, and the papillæ are flattened out.

c Normal epidermis.

Fig. 2. Minute anatomy of a papulo-squamous syphilide.
(*After Crocker.*)

a Enlarged papilla, free cell-exudation separating connective tissue fibres.

b Exudation-cell masses round vessels.

c Similar cell masses round a hair-follicle, and in wedge-shaped foci in the deep part of the corium.

The epidermis is thickened with downgrowth of the interpapillary part. The greater part of the scales have fallen off in the preparation.

Fig. 1.

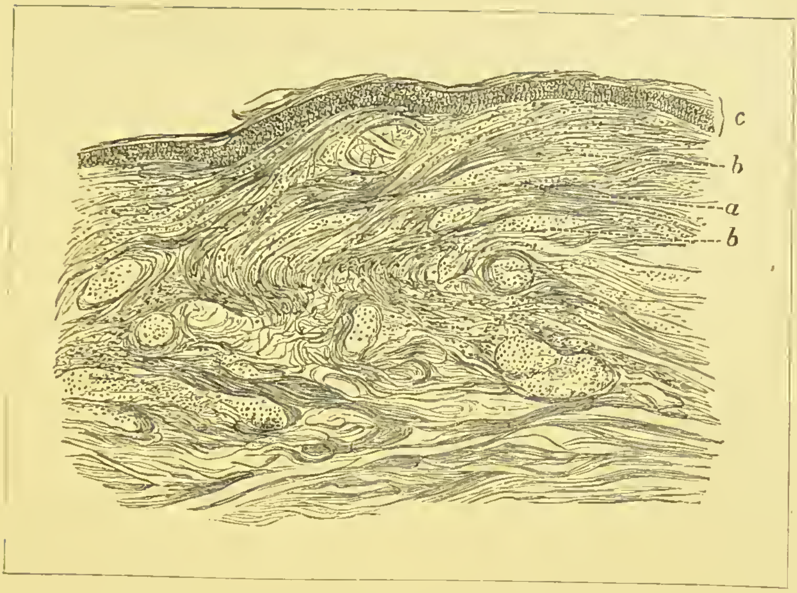
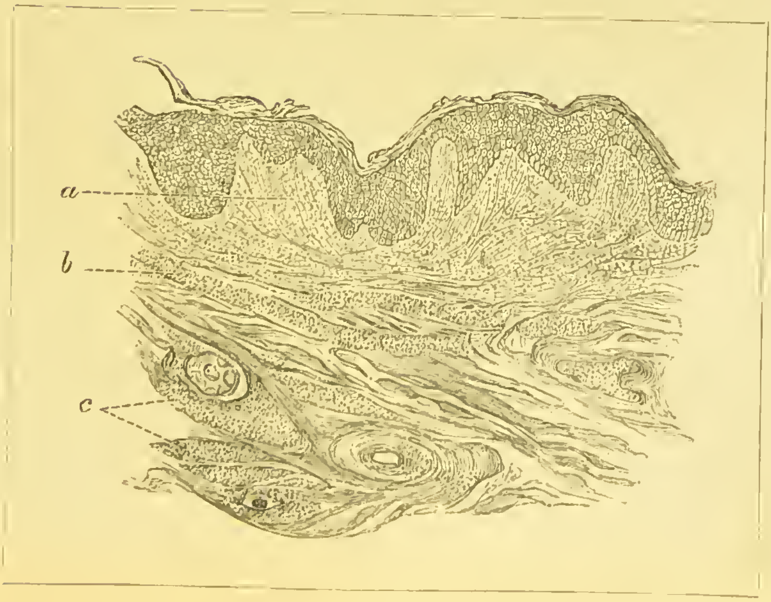


Fig. 2.



layer is lost, the papillæ are more or less flattened out, the fibres of the corium are separated, presumably by the fluid effused, so that the individual fibres can be made out. There is only a moderate small cell infiltration, and this is almost exclusively round the vessels of the superficial plexus, with their papillary branches; the capillaries and small arteries are moderately dilated and both stuffed and surrounded by cells; in the walls of the capillaries are prominent nuclei. The adventitia of the larger vessels contains round and spindle cells as first described by Biesiadecki. There is slight cell effusion around the hair, sebaceous follicles, and sweat ducts, when they lie in the upper part of the corium, but the sweat glands and all the structures in the deep part of the corium are normal. Kaposi saw caudate cells in the connective tissue of the papillæ.

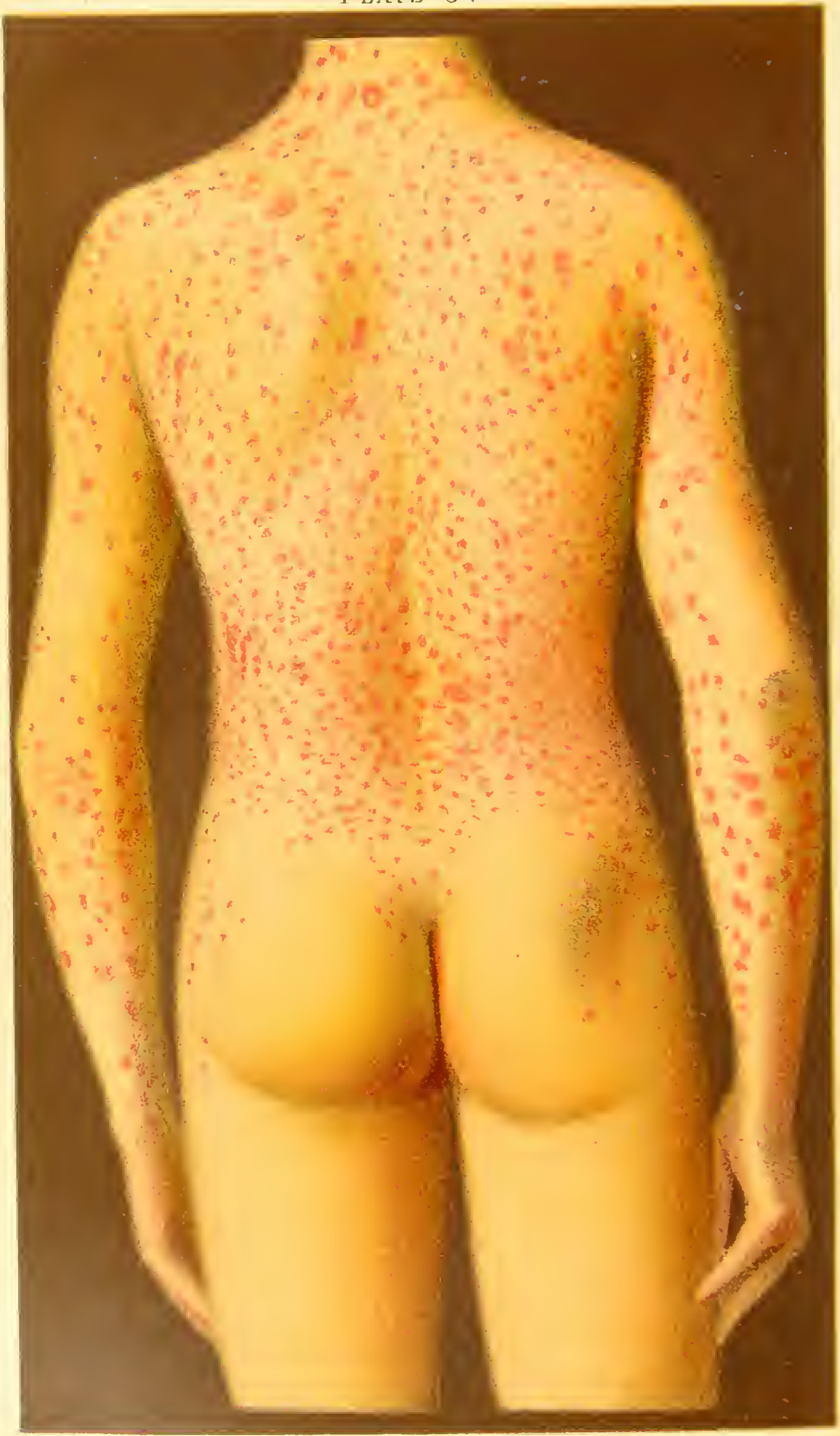
Syphilitic roseola may be mistaken for other cutaneous eruptions—*e.g.*, the rash of measles, scarlatina, simple erythema, or of urticaria; eruptions following the use of certain drugs, pityriasis versicolor, urticaria pigmentosa, and perhaps that rare affection pityriasis maculata. The absence of catarrhal symptoms, the gradual development of the eruption, and the rapid subsidence of the febrile movement will serve to distinguish it from the two first; but in a slight attack of measles the eruption may closely resemble that of syphilitic roseola. In the latter, however, careful examination will always detect *induration of the lymphatic glands* and *some remains of the primary lesion*. In scarlet fever the face is seldom free from the eruption; and in measles, the eruption almost invariably appears first on the face. The use of copaiba, cubebs, and other similar drugs gives rise in some patients to eruptions more or less resembling syphilitic roseola. The occurrence of these eruptions tended to support the old view of the identity of syphilis and gonorrhœa. The *roseola balsamica*, as it has been called, is more like the rash of urticaria; it is accompanied by an intense itching and burning sensation, and by symptoms of gastric disturbance. Many of the patches are large and œdematous, and they are apt to become confluent where the skin is subjected to pressure. The face is affected, and the eruption shows a preference for the neighbourhood of the joints. An erythematous eruption due to the use of mercury has been observed in a few cases. It takes the form of a confluent red efflorescence, covering large portions of the integument. In a case observed by Zeissl, the eruption appeared on the flexor surfaces of the forearms and thighs, and on the trunk. The patient was being treated for an indurated sore, but he asserted that a similar eruption had in his case invariably followed the use of small doses of mercury when given for other affections. In two cases observed by Dr. Pereira, the diffused redness was due to minute and pellucid vesicles which gave a sensation of roughness to the touch. The diagnosis is, of course, easy—syphilitic roseola tends to disappear when mercury is given. The remains of syphilitic roseola may closely resemble the eruption of pityriasis versicolor. The latter is, however, more scaly in character, is very chronic, and the colour is confined to the superficial layers of epithelium. When the scales are removed, the skin beneath them is normal in colour.

Urticaria pigmentosa is a disease of early infancy, the disease being essentially an urticaria in which the wheals on subsiding leave pigmented patches which are very like the macular syphilide. The chronicity, pruritus, and presence of a few wheals, will settle the diagnosis. Pityriasis maculata is more common in

EXPLANATION OF PLATE VI.

Papulo-squamous syphilide.

PLATE 6.



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children, but it may occur in adults. The presence of scales and absence of staining and other signs of syphilis will establish the diagnosis.

The Papular Syphilitic Eruptions may be divided into two classes, according to whether they are developed round a hair follicle or not. Each of these may again be subdivided into two varieties—the large and the small. The non-follicular varieties are flat or lenticular, and the follicular or lichenoid are conical in shape.

The Papulo-squamous, small papular syphilide, or, as it is sometimes called, syphilitic psoriasis, is the commonest of all the syphilitic eruptions (see Pl. VI.). It commences as a small bright-red flat papule which extends peripherally. The apex then desquamates, the desquamation extending to the edges. When the scales from the centre are lost, there is left a collar of desquamating scales showing in the centre the papule, which by this time has assumed a coppery tint, the whole being very characteristic. The eruption comes out in successive crops, leaving light brown coloured stains where involution has taken place. The rash is distributed all over the trunk and limbs, especially on the flexor surfaces, and on the face, especially at the edge of the scalp, forming the corona Veneris, and round the nose and mouth.

MINUTE ANATOMY (see Pl. V., Fig. 2).—Crocker describes the following changes:—The upper half of the horny layers had desquamated, the rete was thinned in some places and thickened in others; the thinned part was where the process was most acute, the outline of the lowest part of the rete was irregular from loosening of the lowest cells, which were vertically elongated but attenuated. Where the rete cells had proliferated and the whole thickened, the sharp definition of the boundary line between the rete and papillæ was preserved, and the rete processes were broader, as well as elongated.

In the more acute part, the papillæ were enlarged laterally and vertically, the fibrous structure was obscured with amorphous granules, and the round cells present only in moderate numbers; the effusion of serum and leucocytes was greatest in the papillæ, getting gradually less towards the horizontal plexus, but not ceasing there entirely. Here and there, small collections of round cells were to be seen deep in the corium—*e.g.*, round a vessel communicating with the deep and superficial plexuses, between the acini of a sweat gland, or round the base of a hair follicle, though these structures were not, as a rule, affected in their deep parts. Then, it was common enough to see cell infiltration between the angle of the rete and a hair follicle or sweat duct, sometimes on one side only, pushing the hair over almost parallel to its arrector muscle, whilst on both sides it often extended downwards for a considerable distance.

The papulo-squamous syphilide has to be diagnosed from ordinary *psoriasis*, from *psoriasis guttata*, and from *papular eczema.*

Ordinary *psoriasis* has a predilection for the extensor aspect of the limbs, the patches are larger, and the scales much more numerous and silvery.

In *psoriasis guttata* the eruption is mainly on the extensor surfaces and at widely different points, the scales are numerous, firmly adherent, of silvery whiteness, and when forcibly removed, brilliant red or bleeding points are visible. In the syphilitic variety, on the other hand, the flexor surfaces of the limbs are the most affected, the foci of disease are not set widely apart, the patches are fairly uniform in size, the scales are not usually very numerous, and are greyish in tint, whilst the centre generally shows the characteristic raw ham colour of the underlying papule.

From commencing papular eczema it may be distinguished by the absence of irritation, the early desquamation and want of vesiculation.

The Circinate, annular, or orbicular syphilide. This is ordinarily developed later than the papulo-squamous syphilide, and generally occurs in the relapses, but it may in exceptional cases appear early. Its favourite position is the back of the neck, the forehead, round the mouth and chin, as well as on the soles and palms ; it forms the lepra syphilitica of the older authors.

The lesions are circular, from ½ in. to 1½ in. in diameter, have a well-defined firm raised border about an eighth of an inch wide, covered with scales, enclosing a smooth plain surface, from which the scales have disappeared. By coalescence the circles may form various figures.

MINUTE ANATOMY.—According to Crocker, in a specimen he examined, there was increase of the horny layers, which were almost completely thrown off, also an increased thickness of the *stratum granulosum.* The upper part of the scaly crust was homogeneous, with closely compressed layers ; but deeper down, the structure was looser, and permeated with small rounded bodies both scattered and in masses. In the rete there was proliferation of the cells, and the interpapillary processes were greatly elongated and sometimes interlaced, forming lacunæ filled with leucocytes. The papillæ were correspondingly enlarged both vertically and laterally ; they were filled with exudation cells which extended to the horizontal vessels of the superficial plexus, diminishing towards the rete. The capillaries were dilated, but their walls were not greatly infiltrated. The deep layers of the corium were only slightly involved, and in about the same proportion as in the papulo-squamous variety.

The Large Papular or Lenticular syphilide is a common early eruption, and is frequently seen with the macular variety. It may, however, be manifested as a relapsing syphilide at a later period. It consists of raised papules, convex, and from an eighth to half an inch in diameter. The papules may be numerous or few, they are not grouped except round the mouth or genitals. They either attain their full size soon after their appearance or continue to increase in circumference. They are firm to the touch, brownish-red in colour, sharply defined, and their surface is smooth and glossy. As a general rule, no definite arrangement can be detected. Their most common seats are the shoulders, the abdomen, the sides of the trunk, and the back. They are also seen on the forehead, at the margin of the hairy scalp, about the nostrils and mouth, on the genital organs, and on the limbs. One form of the so-called "corona Veneris" is due to an eruption of large papules on the forehead. The eruption pursues a chronic course; fresh crops of papules often appear while others are undergoing resolution. This latter process takes place gradually; the papule diminishes in size; its surface, previously tense, becomes wrinkled and slight exfoliation occurs, commencing from the centre of the papule. Resolution goes on, the projection becomes converted into a slight depression, brownish-red in colour, and covered by minute epithelial scales. These depressions remain visible for some time. In some cases the desquamative process is more marked and rapid, and the eruption in this stage is of a scaly character. This condition is frequently seen on the palms and soles.

It sometimes happens that a papule becomes converted into a vesicle or series of vesicles. In the latter case the eruption may resemble herpes circinatus, which, however, is devoid of a papular base and of a whitish patch of integument as a centre.

MINUTE ANATOMY. — Syphilitic papules are the result of a somewhat sharply-defined small cell infiltration of the papillary layer and the whole of the corium, commencing round the vessels of the superficial and deep plexuses. The infiltration is greater in the papillary layer and the subjacent parts, the structure of the corium being obscured by it. There is little infiltration in the hair follicles, but the lumen of the sweat ducts and coils are blocked with proliferating cells, and there is small cell infiltration between the coils. The rete is thickened in some places and thinned in others, and here and there downgrowths of the interpapillary processes are seen. The process is confined to the infiltrated spot; there is no œdema of the surrounding portions of the corium.

The lenticular syphilide is often associated with roseolar and pustular eruptions, and the papules are generally found in various stages of development, some being in process of formation, some being mature, whilst others are undergoing resolution. These varying appearances are due to the fact that the eruption ordinarily occurs in successive crops, each crop remaining for several weeks. They are never accompanied by itching. Relapses are common, and may occur repeatedly in the same patient. When the interval between its appearance and the primary lesion is considerable, the eruption is prone to affect special portions of the surface—*e.g.*, the elbows and knees—and to assume circular or more or less curved forms. The limitation to certain parts is characteristic of an old-standing syphilitic affection; on the other hand, in recent cases, the eruption is more or less diffused. The lenticular syphilide is sometimes the first cutaneous manifestation.

There are two important modifications of the syphilitic papular eruption. These are mainly due to the *locality* in which the papules are developed. The first of these modifications constitutes *syphilitic psoriasis of the palms and soles*, the second gives rise to the so-called *broad condylomata* or *mucous papules.*

Syphilitic psoriasis of the palms and soles is due to the development of papules on these parts, which, as a general rule, are unaffected in ordinary psoriasis, never, in fact, without the typical eruption being developed elsewhere. The papules appear in the hollows of the palms and on the soles of the feet, especially towards the inner border. They are brownish-red in colour, and project but little, owing to the thickness of the epithelium. They sometimes occur in common with a general eruption, but more frequently after the latter has disappeared. They generally occur within the first year, but they may continue for some years.. Their course may be similar to that observed on other parts of the body, but generally they are of a much more chronic character. They have a marked tendency to recurrence, and are very obstinate to specific treatment. The desquamation in the latter class of cases is a marked feature; and hence the scaly appearance of the eruption in its later stages. The papules vary in number, sometimes there are only a few on each palm; in other cases they are much more numerous, and form, by confluence, circular patches, which are bounded by a dark-red margin of infiltration, and covered by dry and cracked epithelial scales. When the papules are situated between the toes or in the furrows of the hand, they are often converted into fissures or *rhagades.* In severe and chronic cases, the eruption extends over the whole of the palm and the palmar surface of the fingers; it may even extend to their dorsal surfaces. The entire palm may be covered with scales, while at the sides and towards the wrist, papules are seen in various stages of development. The extension of the eruption to the nails causes them to become fissured and brittle. A very severe form of the affection has been termed *psoriasis cornea* or corneous syphilide. The palms and soles are covered by dense hard layers of epidermis, marked by numerous deep clefts radiating from the centre. This condition may exist for several years, and finally subside under local and general treatment. The skin, however, seldom regains its normal colour; brownish-red discolorations generally remain. The severer forms are more common on the palms than on the soles, and relapses are frequently seen. The chronicity of these syphilides is probably largely due to the fact that the lesions are constantly irritated by pressure and friction.

The diagnosis of the milder forms of psoriasis palmaris is, for the most part, easy. The existence of separate papules furnishes the clue to the nature of the case. In chronic and severe cases, the appearances may closely resemble those of chronic eczema or of ordinary psoriasis, but the history and the co-existence of other symptoms will aid in determining the diagnosis, which, in the case of psoriasis, will not present any difficulties. Psoriasis palmaris is, however, often confounded with eczema, especially when the papules have coalesced, forming large diffuse patches of infiltration with a circinate border. A consideration of the following points will help to clear up the diagnosis:—Syphilis usually begins in the middle of the palm, and spreads from the centre by contact and fusion of new papules, the whole having a copper-coloured, irregular, scalloped, and sharply-defined border, with desquamative scales on the surface. Eczema generally commences on the wrist or thenar eminence, on the fingers, or on the dorsum of the hand, on which latter place syphilis is very rarely found; the infiltration is more uniform, the edge is more regular and curved, and it does not terminate so abruptly as the syphilide.

The second modification of the syphilitic papule is the *flat or broad condyloma* (also called mucous papules, moist papules, etc.). This term is applied to lesions peculiar to syphilis, and consisting of roundish elevations, varying much in size and situated on mucous membranes, and on portions of the skin where neighbouring surfaces come into contact with each other, and are kept moist by perspiration or other secretions. These condylomata are most frequently found on the female genital organs, and in both sexes around the margin of the anus (see Pl. XVII., Fig 2), on the nates and in the groins, about the umbilicus, between the toes, and on the breast in the female, etc. Broad condylomata vary in size; the smallest are less than a line in diameter, while the larger ones (formed by the confluence of many papules) measure one or two inches. They are firm and elastic to the touch, and brownish-red or grey in colour. The surface may be smooth or nodulated, and is either dry or covered with a moist offensive discharge.

These growths are developed from ordinary syphilitic papules, under the influence of warmth and moisture. The epidermis becomes softened and detached, and the eruption assumes a reddish moist appearance. Continuous irritation leads to the enlargement of the papules laterally and perpendicularly, to increase in their number, and their confluence results in the production of large patches. Neighbouring portions of the integument, in contact with the papules and moistened by their secretion, are very liable to become the seat of similar growths. Hence it is, that if neglected, these condylomata rapidly spread and multiply on the vulva, perineum, etc. The multiplication of condylomata may also be due to the general infection, the secretion acting as an irritant upon papillæ already undergoing syphilitic change. Ordinary lenticular papules are often seen on the integument immediately surrounding a condylomatous patch, and these are especially prone to increase and spread. Ulceration often takes place on the surface, as a result of friction; and it sometimes happens that elongated warty excrescences make their appearance. These are distinguished from the acuminate growths, of a non-syphilitic character, by the fact that they grow from an infiltrated base, whereas the pointed excrescences are seated upon normal skin, and are more or less pedunculated The condylomata are chronic in their course, but under proper treatment they diminish in size, become dry, and finally disappear, leaving traces behind them in the form of brown discolorations.

Minute Anatomy (see Pl. XVIII., Fig. 1).—With regard to their structure, broad condylomata are the result of circumscribed small cell infiltration of the papillary layer and of the corium. The papillæ are considerably enlarged, often branched and presenting club-shaped endings. These latter are exposed when the epithelium becomes detached. The rete passes between the split processes of the papillæ.

The latter is much thickened, its cells are swollen, and plainly show the nucleus and several nucleoli. In many places proliferation of the cells of this layer may be observed.

The diagnosis is, for the most part, easily made, especially when the growths occur on the genital organs or parts adjoining, but they have been mistaken for epithelioma of the anus. They are to be distinguished from patches of eczema by their papular form. The so-called pointed condylomata are not due to syphilis, but to the irritation set up by various non-specific secretions.

Broad condylomata are positive signs of constitutional syphilis, and in some cases they appear as the primary manifestation of the disease. The discharges from these growths are of a highly contagious nature, and when inoculated upon a non-syphilitic individual give rise to a papule or condyloma, which is sooner or later followed by glandular swelling and induration, roseola, and other "secondary" symptoms. No ulcer necessarily makes its appearance, and the papule must therefore be regarded as the primary lesion. On the other hand, a chancre may become transformed into a condyloma, as seen especially on mucous membranes. In infants, the subjects of hereditary syphilis, condylomata are the most frequent of all the cutaneous manifestations.

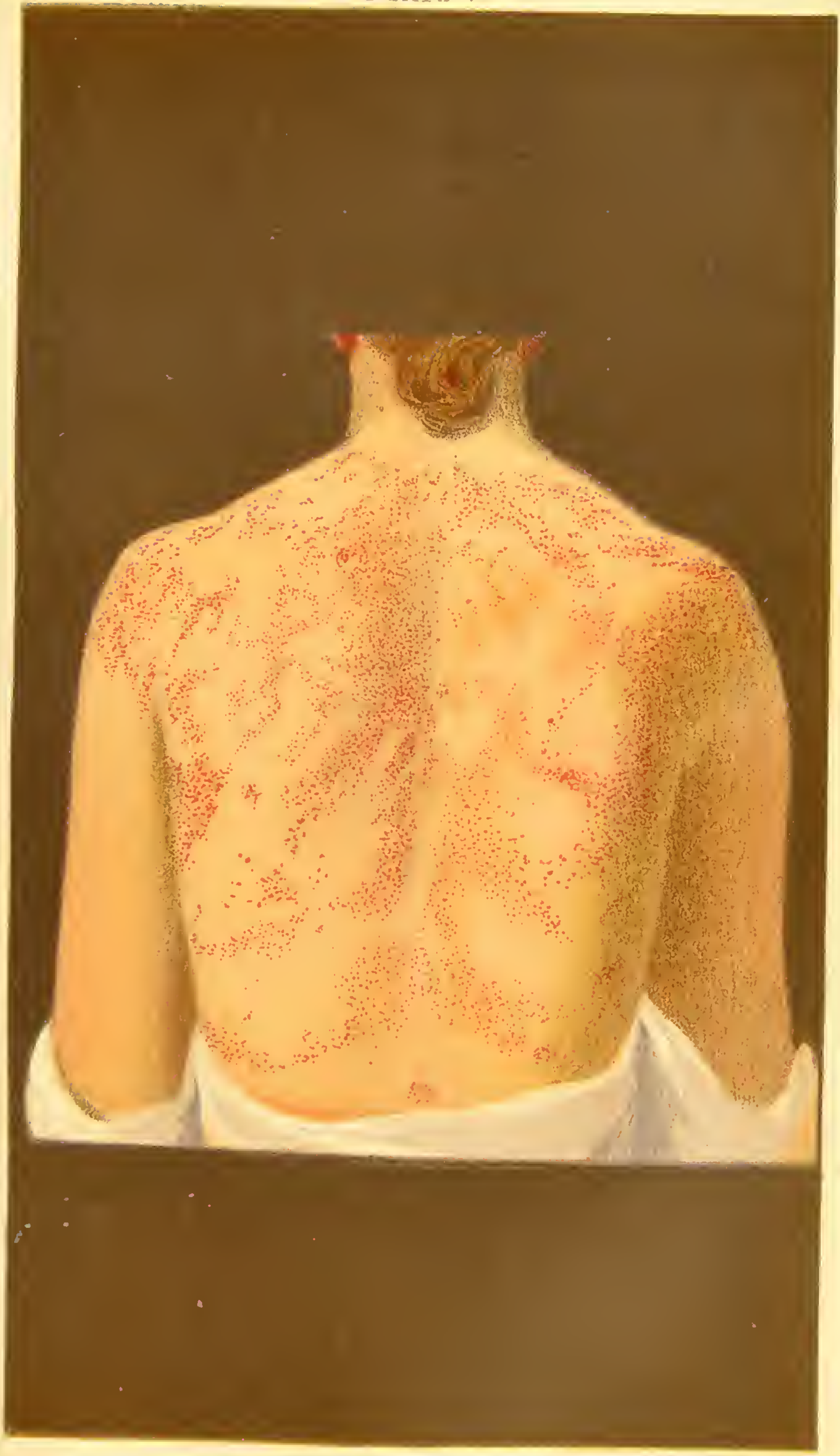
The Lichenoid or Miliary Papular Syphilide (lichen syphiliticus, syphilis cutanea miliaris) occurs in two varieties, the large and the small, in each of which the hair follicle is the seat of the lesion (see Pl. VII.). The lichenoid syphilide, and especially the small variety, is not very common.

The Large Lichenoid Syphilide consists of small papules about the size of a pin's head, bright-red at first but fading to a brownish-red, very slightly raised,

EXPLANATION OF PLATE VII.

Large lichenoid or miliary syphilide.

PLATE 7



acuminate with a small scale on the head, which often proceeds from the drying-up of a minute vesicle. Its distinctive feature is its collection into groups forming segments of circles or circular patches or curves of various forms, each patch consisting of from ten to forty lesions. This eruption comes out in crops; and as a result of intensity, vesicles or pustules may form on the apices of the papules. It often happens that the eruption is very rapidly developed, and is attended by marked febrile symptoms. Certain parts—viz., the back, neck, face, and the genital organs—are especially liable to be affected. The miliary papules belong to the early stages of secondary syphilis, but they sometimes appear later on, and one or more relapses may occur. In the latter case, the eruption is generally confined to certain parts of the body, and the papules appear in more or less distinct groups. Under any circumstances the course of eruption is generally chronic. In severe cases, where pustules have formed, tiny pigmented depressions, indicating atrophy of the corium, are likely to remain upon the skin, and are very diagnostic of syphilis.

The Small Lichenoid Syphilide occurs more frequently in women than in men, and is rare (see Pl. X., Fig. 1). The small papules, each connected with a hair follicle, are convex, pink at first, but this soon fades to a light brown, and in dark skins becomes almost indistinguishable. This syphilide occurs in groups, and resembles very much lichen scrofulosum, but the latter is rare after puberty, is seldom seen on the limbs, and never on the head.

Lichen ruber planus may be confounded with lichen syphiliticus; but in the former disease, the groups of papules are larger, the papules are umbilicated, of a more purplish colour, and give rise to great irritation. As explained above, the miliary papular syphilide may become a vesicle by exudation taking place into its substance; it then forms the *miliary papulo-vesicular* syphilide, and by further intensity of the inflammatory process, this vesicle may be converted into a pustule, giving rise to the *miliary papulo-pustular* syphilide.

MINUTE ANATOMY.—In the large lichenoid syphilide (see Pl. VIII.), Crocker describes the process as limited in and around the hair follicle, and attacking the hair papilla. There is slight disturbance of the horny layers close to the hair follicle, the rete being thickened and raised to form a papule round the hair. There is dense cell infiltration into the papillæ and all the tissue round the follicle. The lower part of the external root-sheath below the hair-shaft is dilated into a circular sac. The internal root-sheath is distended and may be ruptured, and the papilla is densely infiltrated with leucocytes which partially separate the hair-shaft from the inner-sheath. In the small lichenoid syphilide (see Pl. IX.), the cell infiltration completely surrounds and permeates the follicular wall, but does not affect the root-sheath or break up the structure of the follicle.

The Vesicular, or Varicella Syphilides are the result of inflammatory changes taking place in a papule, the vesicle often passing into a pustule. After a few days the vesicle becomes flattened or umbilicated, and either ruptures or the contents become dried up, forming a brownish or dark-greenish adherent crust. When this crust is removed or falls off, a deep-red papule is exposed, which gradually dies away leaving a stained depression behind. The vesicular syphilides are generally associated with other eruptions or symptoms of syphilis; they are not very common, but when they

EXPLANATION OF PLATE VIII.

Minute anatomy of large lichenoid syphilide. (*After Crocker.*)

a Cell-effusion in the angle of the hair-follicle.

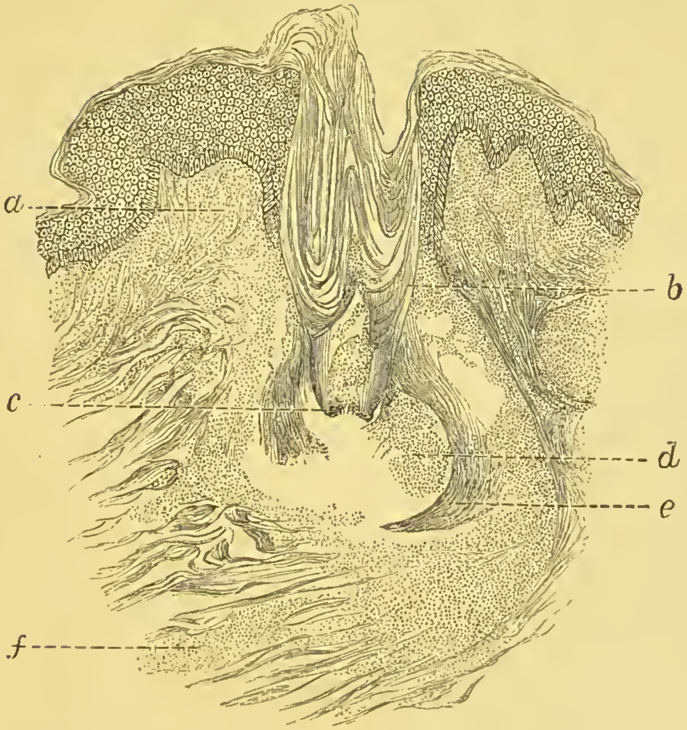
b Dilated hair-sac nearly filled with horny scales.

c Hair-papilla destroyed by the inflammation.

d Inflammatory effusion separating hair-sac from the hair itself.

e Portion of dilated hair-sac.

f Masses of cell-effusion below the hair-follicle.


a
b
c
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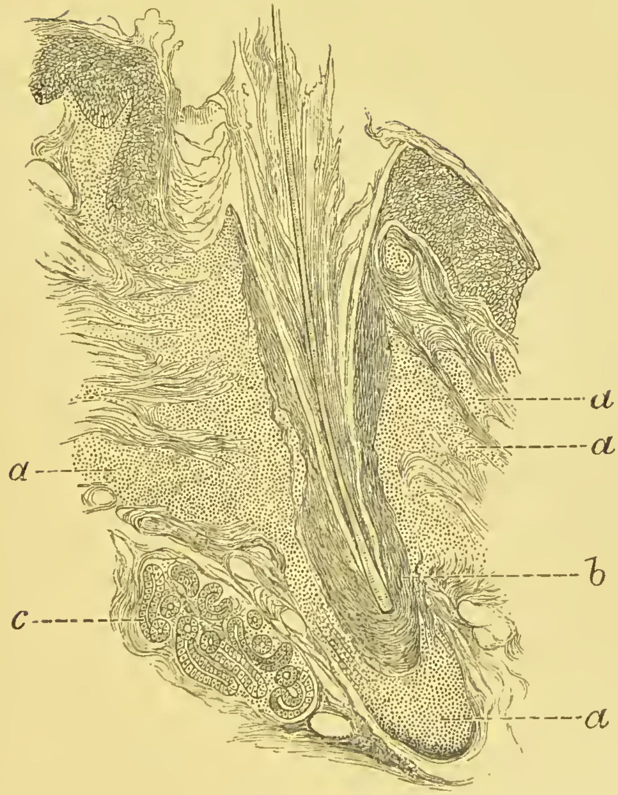
EXPLANATION OF PLATE IX.

Minute anatomy of small lichenoid syphilide. (*After Crocker.*)

a, a Masses of round cell-effusion completely enclosing the hair-follicle.

b Hair-follicle unaffected.

c Sweat coil with cell-exudation between the acini.


a
a
a
b
c
a

do appear it is generally early in the disease, and they are apt to run a rather chronic course. The lesions are generally discrete, but a rare form has been described where the vesicles became confluent. The vesicular syphilide may simulate herpes, especially if it comes out in a few patches on the face or trunk. This variety is frequently known as *herpes syphiliticus* or herpetiform syphilide. The vesicles are about the size of a pea, each being on a deep-red base and grouped irregularly. The vesicles dry up or rupture, leaving a brownish raised papule; frequently the vesicle is converted into a pustule, and when the contents dry up a yellow scab is formed, underneath which slight ulceration takes place.

Another form of the vesicular variety is known as the *eczematous syphilide.* This syphilide is very rare, and consists of small vesicles either grouped together or scattered irregularly over a small reddened area. Each vesicle is on the summit of a small papule. The vesicles do not weep or burst, nor does the cuticle crack, as in eczema, but they gradually dry up, forming small coppery papules, which ultimately slowly disappear, leaving only pigmentation behind.

The Pustular Syphilides are to be regarded as an advanced stage of the papular forms. The development of pustules from papules is sometimes evident; but in other cases the pus is so rapidly formed that the papular stage can scarcely be distinguished. Pustular eruptions are less frequent than the roseolar and papular forms; they belong to the later secondary stage of syphilis, and are usually indicative of deterioration of the general health, especially if occurring early in the disease. The pustules may be few or many, and they may be scattered over the body, or may appear in groups and in particular regions. They are most frequently seen on the scalp and face. Relapses are common. After continuing for some time, the pustules become converted into dry crusts, which fall off, exposing papular elevations, but in the severer forms ulceration is seen. The pustular syphilides are generally associated with marked glandular swelling and induration, and with affections of the eyes, bones, and testicles. Rheumatic pains and various indications of ill health frequently co-exist. As the general health improves, the pustules cease to appear, or the eruption becomes more and more papular in its character.

The following are the varieties of this eruption:—

(1) *The varioliform syphilide.*—The pustules in this form closely resemble those of small-pox. They are at first semi-globular and afterwards become flattened or even depressed at the centre. They are usually large, sometimes attaining the size of a pea. Their contents, at first clear, gradually become opaque and subsequently form brown or blackish crusts. Each pustule is surrounded by a coppery-red areola. This form is seen both in acquired and in congenital syphilis. The pustules are usually scattered, and are most frequently found on the forehead and face, on the anterior aspect of the trunk, and in the groins. They sometimes accompany, but more often follow, an eruption of roseola. Their appearance is seldom attended by any febrile symptoms. The eruption is spread over a period varying from six weeks to as many months, according as it appears in one or more crops. When the crusts fall off, coppery-red papules remain for some time, but these later on give place to a pigmented depression. The appearance of this pustular syphilide usually indicates a somewhat severe form of the original disease.

The diagnosis of this form of syphilide is, for the most part, easily made; small-pox, especially the modified variety, being the only disease characterised by a similar eruption. The syphilitic pustules are more slowly developed, are less numerous, and their eruption is ordinarily unaccompanied by febrile symptoms. A papular eruption, which forms the starting point of the pustules, always co-exists. Pain in the back, vomiting, and other indications of an acute affection are invariably absent. The history of the case and the presence of other symptoms of syphilis will establish the diagnosis.

(2) *The acneiform syphilide* belongs properly to the follicular group, as it is caused by acute suppuration in the follicles. It consists of small pointed or rounded pustules having a more or less distinctly papular, bright-red or copper-coloured base. They are usually seen on the hairy scalp, the forehead, back of neck, shoulders, loins, and gluteal regions. The eruption may assume either a subacute or a chronic character; in the former case the pustules are very rapidly formed and appear in great numbers, and their development is accompanied by fever and other symptoms already described. In the chronic cases, the eruption is at first more decidedly papular; the apices of the papules being subsequently converted into pustules. These are less numerous and appear in successive crops, which are generally confined to special regions of the body. After a few days the pustules appear less prominent, and their contents become converted into yellowish and brownish crusts. These fall off, leaving a small papule or a minute depression, or in severe cases a superficial ulcer. The eruption generally comes out early in the disease, but it may last for several weeks or months, and relapses often occur. In these, however, the pustules are generally larger and resemble those of ecthyma. Other symptoms often co-exist

with an eruption of syphilitic acne. If it occurs at an early period, there is certain to be glandular enlargement, and traces of roseola and papular eruptions will, in all probability, be present. The later eruptions of acne are associated with tubercular and gummatous lesions, iritis, diseases of the bones, etc.

(3) *Syphilitic impetigo* occurs in the form of small pustules, sometimes isolated and sometimes forming patches of variable size. They begin as circumscribed dark-red spots, as large as a lentil or pea. The papules are soon converted into pustules which, in turn, rapidly become dried up, and form yellowish-green or brown crusts. The eruption often becomes confluent, and is most frequently found upon the forehead, scalp, and chin, about the mouth and nose, and in the axillæ. It is less frequently seen on the trunk and limbs. A coppery-red areola surrounds each pustule or patch. This form is never seen at an early period of the disease—*i.e.*, within less than six months after the appearance of the primary sore. It belongs rather to the second or third year, and this late form of the eruption is usually confluent and confined to certain parts of the body. In severe and neglected cases, the separation of the crusts sometimes exposes patches of ulceration, mostly of a superficial character, and involving only the upper layers of the corium; the destructive process occasionally spreads in a serpiginous manner (see Pl. XI.). Syphilitic impetigo is a chronic affection, always lasting for some months. The confluent form is the more obstinate; it occurs in cachectic subjects and indicates grave disorder of nutrition. Impetigo contagiosum closely resembles the syphilitic eruption. In the latter, however, the coppery-red areola is a distinguishing characteristic. Impetigo contagiosum

is attended by heat and itching of the skin, and the development of the pustules is more rapid and uniform. It may be confounded with *sycosis*, but in this disease the suppuration is deeper and more furuncular, and is usually attended with brawny infiltration of the skin, and the scalp is not affected. Impetiginous eczema may be distinguished from the confluent variety by the thinner discharge, the flakes, and the irritation.

(4) *Syphilitic ecthyma* is a still more serious form of disease; the pustules are larger than those of impetigo, and are more prone to be attended by ulceration. There are two varieties of this eruption—superficial and deep. In the superficial form, the pustules vary in size, the largest measure half an inch in diameter; they are either disseminated or collected together in groups. They are most frequently situated on the lower extremities and on the scalp. The pustules are rapidly developed upon dark-red elevated spots, and their contents are often dark-coloured, owing to admixture of blood. Desiccation takes place, and dark crusts are formed, under which suppuration progresses until the crusts become detached. Roundish ulcers are then seen, involving the upper layers of the corium. In the deep form of ecthyma, which is generally a late manifestation, except in malignant syphilis, the crusts are composed of several strata, successive layers being added as the suppuration beneath continues (see Pl. X., Fig. 2). The crust thus becomes larger and thicker, and either completely covers the ulcer, or is surrounded by a margin of ulceration. Its detachment reveals a punched-out excavated ulcer, with a dirty-grey or black-red floor, secreting pus which is mixed with blood, and which rapidly dries into a greenish-black crust. Confluence of the pustules gives rise to large and irregularly-shaped ulcers,

which, in severe and neglected cases, continue to increase after the crusts have fallen off. These ulcers are sometimes very obstinate, and they leave indelible and depressed cicatrices, which are at first brownish-red, and subsequently become white and shining. The occurrence of this form of ecthyma indicates marked deterioration of the general health; the resulting suppuration leads to further exhaustion, and is often attended by remittent febrile symptoms (see p. 113). Syphilitic ecthyma rarely appears before the sixth month after infection, and is generally a very late secondary manifestation, often forming a sort of intermediate stage between the ordinary secondary and tertiary symptoms; it is generally associated with condylomata, with affections of the bones and periosteum, iritis, etc. Relapses often occur.

With regard to diagnosis, the history and co-existing symptoms must be taken into consideration. The local appearances closely resemble those of non-specific ecthyma occurring in tubercular subjects; but the latter eruption is more furuncular, and more painful; there is less tendency to crust formation, and the surrounding areola is not copper-coloured. Ecthymatous ulcers on the leg, co-existing with varicose veins, are liable to be mistaken for ordinary varicose ulcers. The occurrence of the eruption on the face as well as on the limbs points to a syphilitic origin.

Rupia, or the Rupial Syphilide, is one of the most typical lesions of syphilis; and when the rupial crusts are present, syphilis may be diagnosed with absolute certainty (see Pl. X., Fig. 3).

The general period for its development is towards the end of the second or third year or later, and it is generally reckoned as one of the latest secondary manifestations; but in malignant syphilis it may appear quite early. When this is the case, the

EXPLANATION OF PLATE X.

Fig. 1. A portion of the skin of the abdomen, showing small lichenoid syphilide.

Fig. 2. Crusts of ecthymatous syphilide.

Fig. 3. Characteristic crusts of rupia.

Plate 10.

Fig 1.

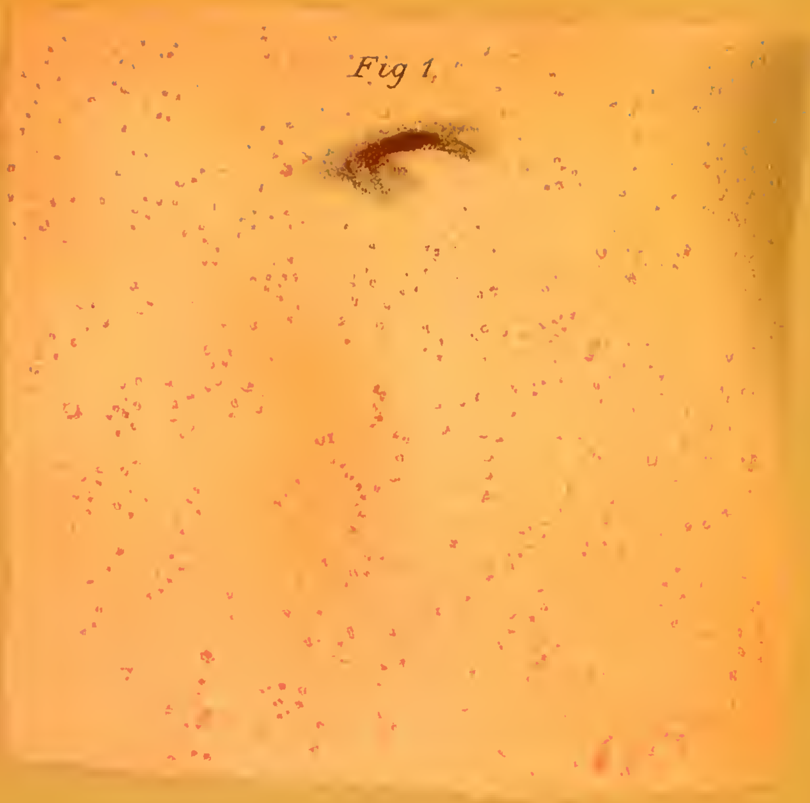


Fig 2.

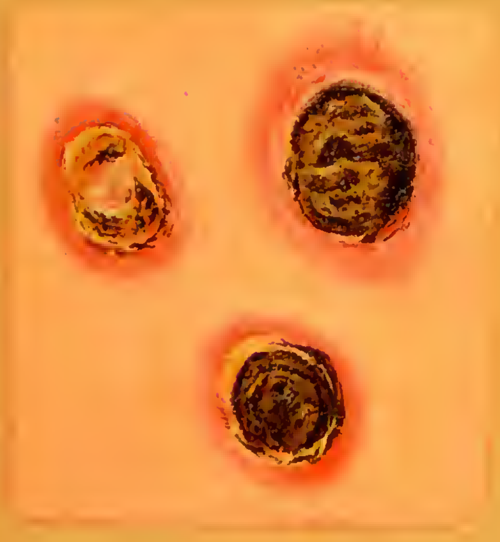
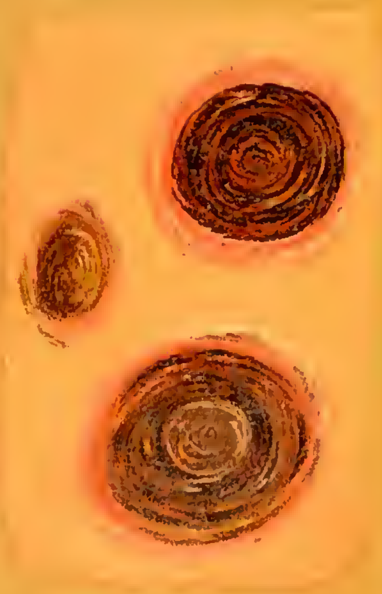


Fig 3.



Hanhart lith

outbreak is frequently preceded by some febrile disturbance, or it may occur when the tertiary period has set in. The presence of the rupial syphilide is always a sign of marked intoxication of the organism with the syphilitic poison, and is frequently the forerunner of some tertiary mischief attacking the nervous system.

The elementary lesion is generally a bulla, or more rarely a flattened pustule. When commencing as a bulla, the fluid quickly becomes purulent, and is surrounded by an inflammatory areola. The epidermis covering the bulla gives way, and as the contents slowly escape they dry, forming a brownish or dark-green crust, under which ulceration takes place. This ulceration extends peripherally, and the crust becomes thickened by the addition of layers of dried pus from below, and as the ulceration extends, each new layer of dried pus applied to the base is wider than the preceding one. In this way, after a little time, there is built up a conical laminated limpet-shell looking crust, so characteristic of this lesion, black, or brownish-black in the centre, which is the older portion, but softer, thinner, and lighter in colour towards the periphery, being surrounded by a pink areola. If the crust is removed, a sharply punched-out, indolent-looking ulcer is revealed, secreting a thin pus which is mixed with blood. The ulcers continue to spread, and even under careful treatment are sometimes very obstinate to heal. They leave smooth, white, shining cicatrices, often surmounted by a ring of pigmentation. Rupia never occurs in inherited syphilis, and is always a manifestation of the acquired disease. The eruption may last a long time, fresh bullæ being formed even whilst the patient is under treatment.

The affections hitherto described belong, as a general rule, to the secondary stage of syphilis; but it must be remembered that many of them also occur in the form of relapses, contemporaneously with symptoms of the tertiary stage. It now remains to consider the *tertiary cutaneous lesions*, which are generally of a far more serious type, and are developed in a slower and more gradual manner (see p. 117).

Gummatous and Tubercular Syphilides (syphilis cutanea nodosa). These consist of formations peculiar to syphilis, and found in the cutaneous, subcutaneous and submucous tissues. Gummata occurring in connection with the skin are circumscribed, and are either superficial and project above the surface, or are more deeply-seated and flattened, and form no visible tumour. They can, however, often be felt and isolated by the fingers. Superficial gummata are firm and elastic to the touch, roundish in form and either globular or more or less flattened. When the nodules are large, they are generally few in number, but small gummata are often very numerous. Their place of origin is either the papillary layer of the corium, whence they extend into the subcutaneous connective tissue; or the deeper layers, their further development taking place towards the surface. Gummata connected with the skin have, therefore, been divided into two classes, cutaneous and subcutaneous.

The tubercular syphilides, *cutaneous gummata*, form well-defined nodules from one-sixth of an inch to an inch in diameter, brownish-red or coppery in colour, spherical in shape, and projecting above the surface of the skin. The large ones extend into the subcutaneous connective tissue. They may occur in any part of the body, and are not symmetrical, but they are usually found in distinct localities, as the face, scalp, shoulders, and legs. They are sometimes arranged in groups, more or less circular in form, with a large nodule as a centre. The tubercles of these groups may coalesce, forming an infiltration in which, however, the component tubercles may generally be discerned, especially near the periphery. When these infiltrations are situated near the mouth, on the chin, or on the nose, they are very liable to ulcerate serpiginously; this condition is known as *lupiform syphilide*, or more frequently, but less correctly, *syphilitic lupus*, and is occasionally mistaken for *lupus vulgaris.* The tubercles are firm and elastic to the touch, and somewhat painful on pressure. One of the forms of palmar psoriasis is due to tubercular syphilides occurring in this situation. When occurring on the face, this syphilide may be mistaken for *acne rosacea.* The exclusive localisation on the face, the redness disappearing on pressure, the dilated and tortuous capillaries, as well as the absence of circumscribed coppery-red and often scaling tubercles arranged in groups with a scalloped contour, serve to distinguish the latter complaint. As before mentioned, there is in many cases a great likeness to lupus vulgaris, which has often led to great difficulty in diagnosis, especially as in both diseases the tubercles may atrophy, or, on the other hand, they may break down and ulcerate with the formation of discharging or crusted-over sores. Again, the tubercles, both of lupus vulgaris and of syphilis, enlarge by the development of fresh nodules at their periphery and advance in a serpiginous way. Lupus vulgaris, however, is much slower in its development, the nodules are not so hard as in syphilis. They are pinkish and translucent, and are more crowded together. When ulceration is present the ulcers are irregular, not so punched-out, the edges having a nibbled-out appearance, and are slightly raised above the skin-level. The floor is smooth and covered with red granulations, which easily bleed. The secretion is less abundant than in syphilis, and the scabs do not present the greenish-black colour. Moreover, lupus vulgaris generally appears before puberty, and if in an adult old scars are found, the chances are that the disease is lupus vulgaris; but it must be remembered that it may happen that a subject of old lupus may contract syphilis, and thus the diagnosis may become complicated. In such a case as this the injection of Koch's tuberculin might be used as an aid to diagnosis. The small, hard, brown-red tubercles have been mistaken for the lenticular syphilide, and if this is done one is led astray as to the length of time the disease has existed. The lenticular syphilides are smaller, flatter, and not painful. Epitheliomatous ulcers of the nose and face may be mistaken for ulcerating tubercular syphilide, but the hard everted edge of the former, the papillomatous character of the floor of the ulcer, the chronic course, and the frequent glandular enlargement, will suggest the true character of the growth.

The subcutaneous gummata are tumours formed in the connective tissue. They vary in size, are firm and elastic to the touch, and at first they neither project above the surface nor are they attached to the skin, which is readily movable over them. As they increase in size they become more or less prominent, and adherent to the skin. They also lose their spherical form and are apt to become flattened and less projecting.

When a gummatous tumour has reached a certain size it usually remains unaltered for an indefinite period. It then either undergoes gradual absorption and disappears, or disintegration takes place and results in the formation of an ulcer. Resolution begins in the centre, which becomes soft and depressed. The softening extends, the tumour becomes less and less perceptible, and finally disappears. When disintegration occurs, the skin over the centre of the tumour becomes red, and sooner or later gives way, giving exit to a little sero-purulent viscid fluid. There is no abundant discharge as from an ordinary abscess. The walls of the cavity are firm and resistant, whilst the cavity itself is large as compared with the opening, which shows no signs of closing until the entire mass is softened and discharged. These processes go on very slowly; when they are completed the cavity is filled up by granulations, and a cicatrix forms which is more or less depressed, according as the nodule was more or less deeply placed. The cicatrix is white and circular and is often adherent to the parts beneath, especially in the case of nodules situated over a bone. Sometimes several openings form over a large gumma.

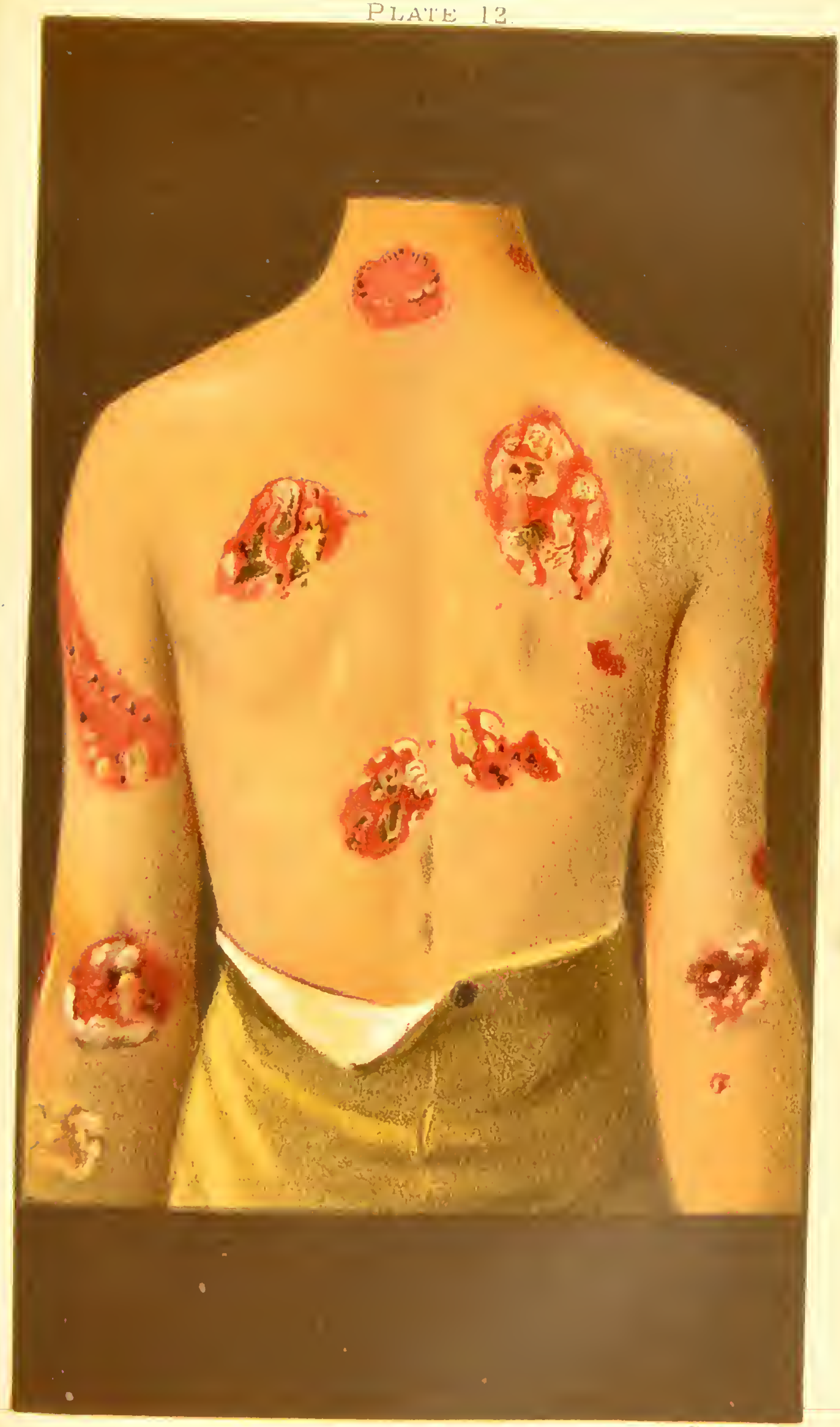
Minute Anatomy.—The following account of the minute anatomy of these nodules is based mainly upon the description given by Cornil and Kaposi. A gumma or nodule is soft and yielding to the touch, is greyish-red in colour, and contains a small quantity of mucous or gummy fluid. Although these growths are the most characteristic productions of syphilis, no special cellular elements have as yet been discovered in connection with them. In the first stage, the skin covering the nodule is slightly elevated, but is not implicated in the growth. The tubercular syphilide does not differ essentially from the large papular syphilide except in the greater extent and depth of the cell infiltration. The demarcation between the rete and papillæ is indistinct, and the infiltration extends upwards from the latter into the former, which becomes narrower, and finally disappears; the cell infiltrated corium is laid bare—this being the commencement of ulceration. In the subcutaneous variety the new growth commences in the adipose tissue, and invades all its deeper portions as well as the loose subcutaneous connective tissue. It is at first limited and distinct, though it gradually merges into the healthy tissue. The growth consists of masses of small round cells, which surround the connective tissue bundles, the ducts of the glands, the adipose cells, and the vessels. The cellular growth thus infiltrates all the subcutaneous tissues, with the exception of the elastic fibres. The cells are also found in the interior of the capillaries and small veins, many of which are filled with coagula caused by obstruction to the circulation. When softening takes place the cellular elements become granular and fatty, and the tumour becomes less dense and finally disappears. If the superficial layers of the skin are infiltrated, perforation is very apt to take place. These gummata rarely occur before the second or third year. They may appear at any subsequent period.

The Ulcerating Syphilide (syphilis cutanea ulcerosa) (see Pl. XI. and XII.).—Syphilitic cutaneous and subcutaneous infiltrations, giving rise to the various forms of papules and nodules already described, may terminate either in resolution or in processes of disintegration in which the integument becomes involved. In the latter case an ulcer results. Ulceration, therefore, is to be regarded as a phase of the papular, pustular, and gummatous or nodular formations. These ulcers are more or less circular in form, and are further characterised by their sharply-defined infiltrated margin, which is often undermined. A yellow or grey exudation adheres

EXPLANATION OF PLATE XII.

Deep serpiginous syphilide.

PLATE 12.



Hanhart lith.

to the floor and tends to become dry and form crusts. The secretion is usually abundant, and inasmuch as the healing process is very slow, these crusts are often found to be composed of layers more or less thick and numerous.

The extent to which the ulcerative process advances is influenced by the course of the infiltration of which it is a consequence. Once set up, the disintegration spreads until the whole of the new formation is involved. It then ceases; but if the infiltration advances, the ulceration follows in its train. Hence it happens that these ulcers are often serpiginous. They begin in a single nodule, and are at first circular; if adjacent nodules are the seat of similar processes, the ulceration spreads from one to the other, until large tracts of skin are involved. Such ulcers often have a reniform shape, owing to the progress of the infiltration at one portion of the circumference. At the part where the infiltration ceases cicatrisation takes place.

The appearances are somewhat different in the case of ulcers the result of disintegration of the deeper or subcutaneous gummata. Here the process is more deeply-seated, and, unless large portions of the skin are implicated, the first appearances are those of an abscess rather than of an ulcer. A small circular opening leads into a cavity, the size of which depends upon that of the gumma. The opening continues to discharge semi-purulent viscid matter, until the whole of the infiltration is removed. If the gumma is large, there may be several openings, separated from each other by narrow and reddened strips of integument; and if these become destroyed a large irregularly-shaped crater-looking ulcer is the result. Such ulcers may remain in an indolent condition for some months, no reparative process taking place until the infiltration is removed. When granulations are formed, they sometimes become exuberant and thus retard cicatrisation. The cicatrices are at first livid, but gradually become paler, and are surrounded by a brownish or coppery areola. When some time has elapsed, they become white, smooth and dry, and can be easily distinguished from the surrounding skin. Little, if any, contraction takes place, so that deformity is rarely produced. The cicatrices, however, are very apt to give way and to become the seat of fresh ulceration. When the ulceration has been seated over a subcutaneous bone, the cicatrix becomes adherent to the periosteum.

Syphilitic ulceration due to gummatous infiltration presents certain peculiarities connected with the places in which it appears. The leg is more often affected than any other part of the body. Next in order of frequency come the forearm and thigh. The neighbourhood of the joints is particularly liable to be attacked; but in these parts the ulceration is generally of a superficial character, being due to cutaneous gummata. The disintegration of subcutaneous gummata, which are most common in the middle third of the leg, gives rise to much more serious ulceration, often of a very chronic character, and complicated by new gummatous formations, erysipelas, periostitis, etc. In severe cases, large portions of the surface of the leg may be covered with nodules or tubercles in various stages, some recent, others ulcerating or in process of cicatrisation, while the skin between them is thickened and inflamed. The bone becomes enlarged, either uniformly or as a result of distinct out-growths; and a condition resembling elephantiasis may become developed in course of time.

EXPLANATION OF PLATE XIII.

Fig. 1. Life-size drawing of patch on arm from Plate XII.

Figs. 2 and 3. Life-size drawing of patches from Plate XI.

PLATE 13.

Fig 1.

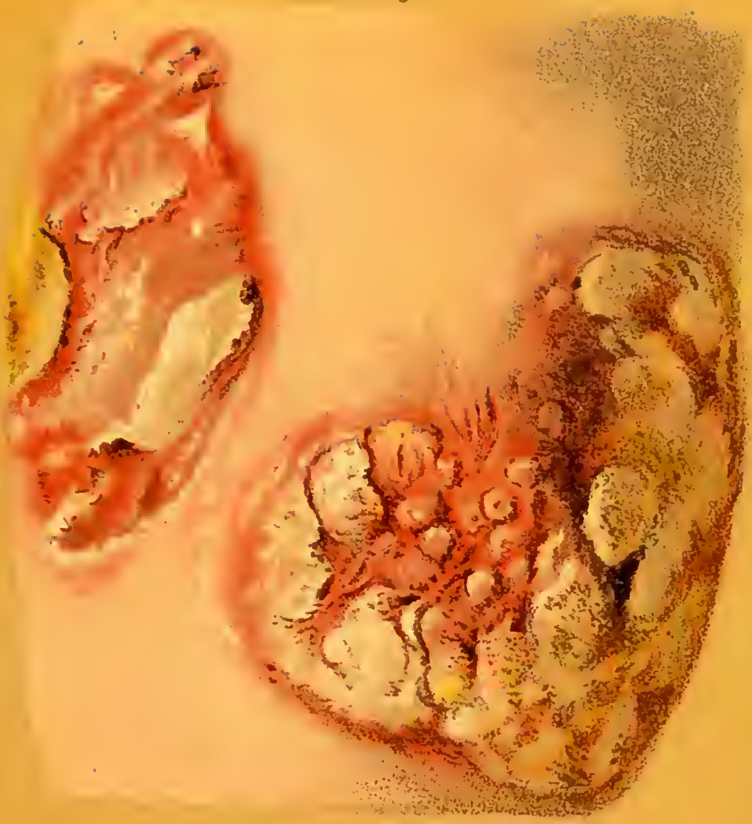


Fig 2.

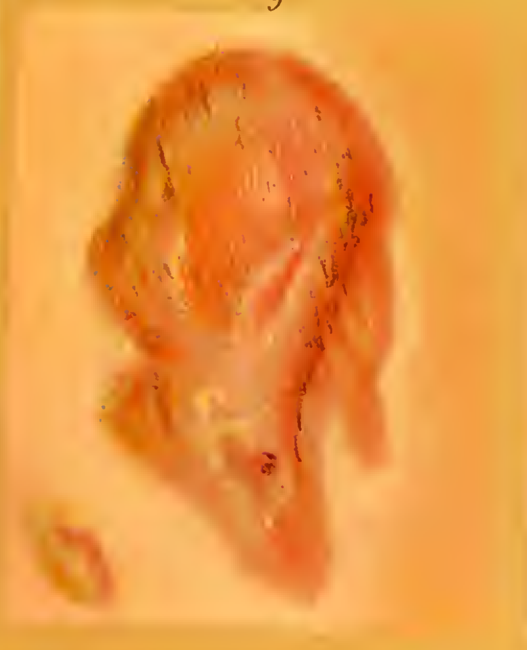
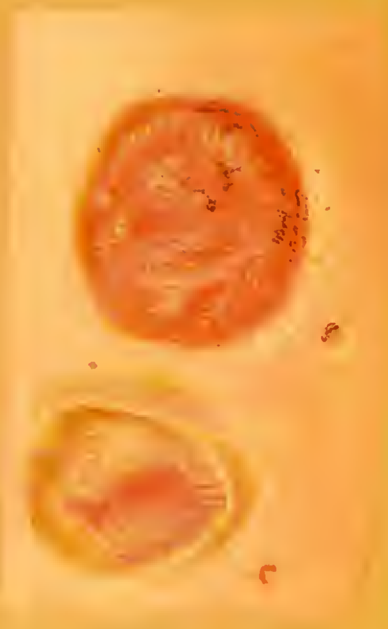


Fig 3.



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Gummatous ulcers of the arm and forearm are less common, but they are sometimes seen in the neighbourhood of the elbow-joint and on the back of the hand. The ulceration is, for the most part, superficial, and the cicatrices do not interfere with movements of the joints. Subcutaneous gummata on the forearm may, however, give rise to deep-seated ulceration.

The face and scalp are often the seat of syphilitic ulceration, consequent upon pustular eruptions or the disintegration of cutaneous and subcutaneous gummata. Ulcers may occur on any part of the face, but the nose, forehead, and region of the mouth are most commonly attacked. Nodules or tubercles of a brownish-red colour, and grouped together in various ways, appear on the sides of the nose and adjoining portions of the face. Suppuration takes place and ulcers form, some of which may penetrate deeply and destroy portions of the nasal cartilages, or even the whole of these structures. If the mucous membrane of the nose be at the same time affected, the destruction is, of course, more extensive and rapid. The bony framework of the nose is also apt to become involved and necrosis results.

Gummata of the scalp give rise, by their disintegration, to ulcers of various forms, at first somewhat circular, but often becoming reniform. These are generally arranged in groups, and their edges are more or less undermined, a condition characteristic of syphilitic ulceration. It sometimes happens that adjacent ulcers communicate with each other beneath the strips of integument; when these latter give way the ulcers become confluent. The secretion forms brown crusts, which extend beyond the edges of the ulcers and cause the hairs to become matted together. Large portions of the integuments of the scalp may thus be destroyed, and in rare cases the ulceration leads to necrosis of the bones.

Syphilitic ulcers on the trunk, due to gummata and nodules, are most frequently found on the back and in the gluteal regions. They are mostly superficial; the nodules appear in circles or groups, suppuration takes place, and ulcers are formed. Deeply-seated gummata in the connective tissue of the gluteal regions may result in the formation of large irregular cavities, with sinuses leading in various directions. Gummata are more frequently developed in the gluteus maximus than in any other muscle.

The tertiary ulcerations, especially those which occur on the hairy portions of the body, such as the scalp, bearded part of the face, etc., are occasionally complicated with much overgrowth and hypertrophy of the papillæ, in the form of large warty vegetating masses, and which, from the resemblance to the papillomatous growths of frambœsia or yaws, are sometimes called *frambœsia syphilitica.* This papillomatous syphilide has a predilection for the regions named, but may occur in other parts. It consists of irregular uneven protuberances, secreting a foul smelling pus, which dries into yellowy-greenish crusts. When these scabs are removed, there will be exposed a red and uneven surface, with large villous or cock's-comb-like vegetations. This hypertrophy of the papillæ is probably not due directly to the syphilitic dyscrasia, as it is often found in connection with other skin ulcerations of non-specific origin, such as lupus hypertrophicus, lupus verrucosus, pemphigus vegetans, frambœsia, and sycosis vegetans. It will be necessary to diagnose it differentially from these conditions, and occasionally the distinction will be found extremely difficult; but, as a rule, when syphilis has reached this stage, we are able to find confirmatory evidence of other specific pathological conditions which will considerably help us in forming a correct conclusion.

The Pigmentary Syphilide.—Pigmentary changes are seen more or less constantly in connection with the involution of the various syphilides, and form one of the chief characteristics of the lesions. These changes may be either an increase or a decrease of the amount of pigment. Increase of pigmentation is seen in the dark-brownish stains which persist after the various syphilides, and in the true pigmentary syphilide. Decrease of the normal skin-pigment occurs in the form of white patches or spots marking the seat of previous macular or papular syphilides, and may result from cicatricial changes of deep pustular and ulcerative syphilides, but there is generally associated with this form of leucoderma an areola of pigmentation which is frequently persistent.

The pigmentary syphilide was first described by Hardy and Pillon in 1853, under the name "Syphilide pigmentaire du col," from its predilection for the sides of the neck, but it may appear on the thigh and trunk. It is a rare form of syphilide, and is more frequently seen in women than in men, and affects dark women more frequently than fair. It generally appears within the second year after infection. The eruption consists of round or oval spots, with an irregular dentate border from an eighth to one inch in diameter, of a colour which has been compared to *café au lait*, isolated or confluent. After a time the centres of these pigmented patches become the seat of leucodermic changes, and the borders become darker; the syphilide then appears as a series of dentate-edged brown rings, each enclosing a centre of apparently abnormally white skin. The spots are level with the skin, and they do not desquamate. The change is very chronic in its course, is little influenced by treatment, indeed it may never disappear. Kaposi and most other German observers regard it as always secondary to a previous roseola, and look upon the white intervening patches of healthy skin as a leucoderma. On the other hand, Taylor of New York, Fiveisky, Maieff, Fournier, and most other French authorities, regard it as a true pigmentary syphilide, and evidence is gradually being accumulated in support of this view. The condition has to be diagnosed from the pigmentation resulting from other secondary syphilides, and from leucoderma occurring on the site of a previous roseola. In uterine chloasma, the face is frequently the seat of pigmentary changes, but the syphilide is very rarely seen in this situation. In tinea versicolor, the pigmentation is on the skin and not in the epidermis.

Purpura, small hæmorrhages in the skin, are occasionally seen during secondary syphilis; but it has not been satisfactorily demonstrated that this purpuric condition has any connection with syphilis, and it must be remembered that purpuric spots are occasionally produced by the exhibition of iodide of potassium.

CHAPTER IX.

SYPHILITIC AFFECTIONS OF THE HAIR AND NAILS.

Alopecia Syphilitica.—Loss of the hair is a frequent, indeed, almost an invariable, symptom of constitutional syphilis. It is generally associated with the early forms of eruption, and is sometimes preceded by severe headache. The hair is observed to lose its glossiness, to become dry, stiff, and wiry; the shafts easily break, and fall out freely when combed. Not only the hair of the head, but that of the beard and moustache, the eyebrows, the eyelashes, and the hair of the pubes and axillæ may be thus affected. The loss may be rapid or more or less chronic in its progress. The hair does not fall out in any particular part of the head, but the loss is either uniformly distributed, so that the hair becomes thin, or it occurs in irregularly, generally symmetrically, scattered patches, simulating alopecia areata. This latter form is the less frequent. In most cases the baldness is not very marked, and is rarely permanent, unless the result of a concomitant seborrhœa, which is a very common occurrence in syphilis. There is no visible change in the skin in this form of alopecia. It sometimes happens that only the beard and moustache, or only one of these, are affected. Alopecia also occurs as the secondary result of the development of some form of syphilide upon the scalp, especially the papulo-pustular variety. In this case the nutrition of the hair is interfered with, and the loss is confined to the seat of the lesion. This form of alopecia is frequently found combined with the first variety. Loss of hair, of course, occurs as a result of syphilitic ulceration of the scalp, chin, etc. In this case the bald spots are the scars left by the ulcers. Even without ulceration the loss of hair is sometimes very considerable in much debilitated subjects. In these cases, however, new hairs are produced as soon as the general condition has become improved, and in this respect syphilitic alopecia resembles the loss of hair which is frequently observed after typhoid fever and other exhausting diseases. Restoration takes place more rapidly in young than in old subjects. Both sexes are equally liable to alopecia as a result of syphilis. The condition has been unjustly attributed to the use of mercury; but it has been repeatedly observed in cases in which this remedy has not been used, and it is almost invariably benefited by mercurial treatment.

There is little difficulty in the *diagnosis.* Other symptoms, especially glandular enlargement, are always present at the same time.

The *treatment* consists in the local application of the Unguent. Hydrarg. Oxid. Rub. and the internal exhibition of mercury.

Syphilitic Affections of the Nails.—These occur in two principal forms. In the first of these inflammation and ulceration take place in the skin immediately surrounding the nail, which is consequently destroyed or becomes detached (paronychia). In the second form, the nail itself is the seat of certain changes, the surrounding parts being far less affected (onychia).

Paronychia syphilitica appears in three forms :—

1. Dry scaling paronychia.
2. Inflammatory paronychia.
3. Ulcerative paronychia.

The *dry scaling paronychia* is the commonest variety, and is an extension of the squamous papule from the skin to the matrix; the nail over the diseased area becomes slightly affected from nutritive changes, it loses its polish, becomes dry, and scaly, and little white pits (*flores unguium*) are formed. The epidermis round the nail becomes at first hard and thickened, resembling a small corn, then fissures and the upper layers are thrown off, whilst the layers underneath become thickened and hard, with fissures and cracks on the surface. As a rule, several fingers are involved successively, and the lesions show very slight inflammatory symptoms, but they are very indolent and chronic.

Inflammatory paronychia.—On one side of the nail, or in the nail-groove, or over the matrix, a round dusky-red papule appears. This papule spreads slowly, and the skin around the nail becomes thickened, and at this stage resembles a whitlow, but its course is very chronic; suppuration does not occur, and, unless exposed to pressure, the swelling is not painful. Occasionally, owing to pressure, ulceration results; this is especially apt to occur when the great toe is attacked, and then a condition is set up which strongly resembles ingrowing toe-nail. A case of this kind is generally accompanied by severe pain.

Ulcerative paronychia.—Ulceration may occur accidentally in the inflammatory variety of paronychia; but this is not true ulcerative paronychia. Ulcerative paronychia most commonly affects the big toe, and is generally a sign either of a large dose of syphilitic poison, or of a neglected case, or both. The ulceration encircles the nail, and is surrounded by a dusky-red raised border. The edges of the ulcer are irregular and undermined, and the floor is covered with large sprouting granulations, which secrete a foul-smelling pus. The ulceration extends to the matrix, the nail becomes yellowish-black and loosened, and, owing to the swelling, the toe becomes club-shaped. Unless the nail is removed it may be completely hidden by the exuberant unhealthy granulations, and keep up irritation by acting as a foreign body. This variety of paronychia runs a very chronic course, and is due to breaking down of a gumma of the matrix. Occasionally the primary sore is seen to start on the skin around the nail, causing paronychia, which usually leads to ultimate loss of the nail.

The dry scaling and ulcerative forms of this disease do not, as a rule, give rise to much difficulty in diagnosis, as other signs of syphilis are generally present. The ulcerative variety may occasionally present some difficulties, but not very frequently, for, as stated above, it is frequently a sign of severe syphilis, and consequently other lesions are likely to be present. It might, however, be mistaken for a form of ulcerating paronychia, which is frequently met with in diabetic patients, preceding gangrene: or for paronychia due to septic infection; but in deciding, the history of the case is the best guide.

The *treatment* of paronychia of the first two varieties consists in the careful administration of mercury internally, and the local use of mild mercurial ointments. In the true ulcerating form, iodide of potassium should be exhibited, to be followed later on by a mercurial course; where the nail is dead and is evidently acting as a foreign body it should be removed, but avulsion should not be practised unless this stage has been reached, as constitutional treatment, combined with the local application of red oxide of mercury ointment, will often prevent the necessity of removing the nail.

Onychia syphilitica is characterised by alterations in the texture of the nail, without any marked affection of the surrounding parts. It may, however, be doubted whether it ever happens that the nails alone are involved; it is more probable that the changes they undergo are really due to lesions of the matrix or adjoining integument. The alterations which are seen in both finger-nails and toe-nails are of several kinds, and belong to the secondary period of the disease. In slight cases the nail remains, but its free border becomes thickened, split, and is apt to break off in layers. In more severe forms the nail undergoes further alterations of structure, it becomes opaque, brittle, and rough; its growth may entirely cease, in which case its posterior border becomes free and separate from the matrix, while its free border is split, cracked, and discoloured; its surface presents numerous ridges and furrows; detachment of the nail, or part of it, eventually takes place. Any new nail that forms is rough, more or less grooved, and irregular in shape. A rather rare form of onychia consists of hypertrophy. The nail becomes three or four times its usual thickness, with a dry, uneven and furrowed surface. The thickening is especially marked at the free border of the nail. Syphilitic onychia is often associated with specific psoriasis palmaris. Eczema, psoriasis, and other non-specific skin affections sometimes cause lesions of the nails resembling those due to syphilis. The diagnosis can be made only by the aid of the previous history of the case.

The *treatment* of syphilitic affections of the nails consists in the careful administration of mercury internally, and the application of various local remedies. Syphilitic onychia requires no special local treatment; the nail should be protected from injury and carefully trimmed. If separation takes place, mercurial ointment, diluted with one or two parts of vaseline, may be applied to the matrix. Forcible removal of the nails, for syphilitic onychia, as practised by some surgeons, is, in my opinion, quite unnecessary, and therefore unjustifiable. Some years ago, a patient consulted me as to whether avulsion of his thumb-nail was necessary, the operation having been suggested by a distinguished surgeon, who had previously removed the patient's forefinger-nail. I advised the patient not to submit to the operation, but to apply ointment of red oxide of mercury, and to take iodide of potassium. Under this treatment healthy action was set up, and the nail resumed its normal appearance.

CHAPTER X.

SYPHILIS OF THE MUCOUS MEMBRANE.

PRIMARY syphilitic affections of the mucous membrane are the consequences of the direct action of the virus upon a given part. The initial sore of syphilis is frequently met with on the mucous membrane of the mouth, and is very often of non-venereal origin. Chancre of the lip is the form most commonly seen (see Pl. XIV.). The lesion is usually single, and has been observed more frequently upon the lower lip, but either lip may be affected, and occasionally both are attacked simultaneously, the chancres being situated exactly opposite each other. Infants are liable to be infected either by kissing or by suckling. The characteristic sore may be accompanied by a brawny swelling involving the whole lip. The submaxillary glands are painful and enlarged.

The tonsils, mucous membrane of the cheeks, gums, and soft palate, may each be the seat of primary syphilis, the person being inoculated either directly, or indirectly by means of infected spoons, knives, tobacco-pipes, Eustachian catheters, and various other media.

The lesions now to be considered are due to the presence of the virus in the blood, and are not confined to the genital organs, lips, and mouth, but may occur on any mucous surface, some parts being more liable to be affected than others. A description will first be given of those lesions of the alimentary canal and respiratory tract which are discoverable on examination.

General Characters of Syphilitic Affections of the Mucous Membrane.—The mouth and throat are the parts most commonly affected, and the lesions often co-exist with the cutaneous manifestations to which they bear a certain resemblance as regards their development, general character, and course. Like the cutaneous affections, certain of the mucous lesions occur at an early period, while others appear at later stages. Those belonging to the former class are, as a general rule, of a more superficial character, and run their course without severe or permanent destruction of tissue. The later lesions are far more severe and destructive, and are often of a very chronic character, sometimes continuing for many years after all cutaneous manifestations have disappeared, and constituting the only indication of the existing disorder.

The syphilitic lesions of the mucous membranes are, however, not to be regarded as exactly akin to, or a reproduction of, the cutaneous eruptions. The anatomical structure of mucous membranes differs considerably from that of the integument, as regards vascularity and the arrangement and form of the glands. Mucous membranes are, moreover, kept constantly moist by their secretion. These differences are sufficient to account for the distinctions which exist between the cutaneous and mucous lesions.

Syphilis appears in the mucous membranes in three distinct forms: (*a*) diffuse erythema, (*b*) papules, and (*c*) gummatous tubercles or nodules. Pustular eruptions are not observed on mucous membranes as a result of syphilis.

Erythema of the mucous membrane is manifested by swelling of the part, with a sharply defined redness diffused over a greater or less extent of surface, and generally seen at the posterior part of the mouth; whitish patches and small erosions are often distributed over the reddened surface. At first the part is dry and sore, but it subsequently becomes covered with mucous secretion. The amount of swelling varies; sometimes it is but slight, but there is generally considerable œdema when parts such as the uvula, tonsils, or larynx are affected. Erythema is an indication of recent infection; it is always accompanied by other early symptoms, such as glandular induration, syphilitic roseola, etc. Its duration varies from a few days to several weeks. In the throat, it is ordinarily more severe and more common in persons liable, from their occupations and other causes, to suffer from ordinary catarrh of that part. Relapses are frequent, and in these cases a papular cutaneous eruption sometimes co-exists with the erythema.

Papular Eruptions of Mucous Membranes or Mucous Tubercles.—These differ in form from the papular cutaneous eruptions and from the moist papules previously described. They are found on the mucous membrane of the mouth, nose, throat, and larynx; on that of the vulva, vagina, and vaginal portion of the uterus, at the orifices of the urethra and anus, and on the inner layer of the prepuce. These mucous plaques are for the most part flat and superficial, projecting but little above the level of the adjacent surface. They are also less developed than the cutaneous papules. Small reddened spots are first seen, and on these the papules gradually appear.

If left to themselves, they become covered with a whitish pellicle, resembling the mark produced by a slight application of nitrate of silver. Such papules, from their appearance, have received the name of *plaques opalines*. This opaline pellicle frequently becomes detached, leaving a reddened spot or erosion, very apt to bleed on the slightest irritation. The papules may disappear by absorption, or may undergo further changes. They may become converted into small ulcers, with irregular edges and uneven surfaces, on which granulations subsequently appear. These ulcers are sometimes covered with greyish or yellowish-white patches resembling aphthæ. In other cases, small pointed growths spring up from the papules. Rhagades or fissures are another result of papular eruptions of mucous membranes. These are frequently seen at the margins of the tongue, and at the orifices of the nostrils and anus.

The eruption of the papules on mucous membranes is sometimes accompanied by pain and soreness, which, however, soon subside unless ulceration or fissures occur. If left to itself, the eruption pursues a very tedious course; fresh crops of papules appearing at irregular intervals. The papules, however, completely disappear in the course of time, no cicatrix remaining, unless ulceration has occurred. When this latter process has taken place, the part affected becomes extremely painful, and its function may be seriously impaired. Thus ulcerating papules on the lips, tongue, or tonsils, interfere more or less with speaking or swallowing, and often cause severe pain and profuse flow of saliva. Certain mechanical and other causes appear to induce the development of papules in syphilitic subjects. Thus, they are especially apt to appear on the lips and tongue of smokers; again, the irritation of a jagged or decayed tooth, will determine their seat, and they are very frequently seen on the lips of glass-blowers and on the genital organs in persons of dirty habits. Relapses are of frequent occurrence.

The Development of Gummatous Tubercles or Nodules in the mucous membranes and submucous tissue is similar to the process which occurs in the integument. These growths are found in the mucous membrane of the mouth and lips, on the tonsils, velum, and palate, at the back of the throat, and on the borders of the tongue. They are also found in the nose, pharynx, and larynx, as well as in the rectum and other portions of the bowels. A small nodule makes its appearance, and gradually increases in size until it becomes as large as a pea or a bean, projecting above the surface as a distinct, though not well-defined tumour. Its growth gives rise to little or no pain. It does not assume a decidedly spherical or globular form, like that of the cutaneous lesions, with which it is identical in structure, but it is somewhat flattened and not circumscribed. Resolution may take place and the growth may disappear; on the other hand, a process of molecular disintegration may be set up, with ulceration as a result. In the latter case, much loss of tissue may be caused, especially in such parts as the uvula and soft palate. The healing of the ulcers may likewise cause considerable deformity and contraction of tubular organs, as in the pharynx, larynx, and rectum. When the affected mucous membrane is adjacent to cartilage and bone, various destructive processes—*e.g.*, periostitis, followed by caries or necrosis—are common results. Such a consequence of the development and disintegration of gummatous growths in the mucous membrane is frequently seen in the nose. Sometimes, however, the process begins in the periosteum, cartilage, or bones, and extends from these towards the surface.

SYPHILIS OF THE MUCOUS MEMBRANE OF THE MOUTH AND THROAT.—Having given a general account of the forms in which syphilis appears in mucous membranes, it remains to consider the special local symptoms and peculiarities. Syphilitic affections of the mucous membrane of the mouth and throat take the form of (*a*) erythema, (*b*) papules, and (*c*) gummata. The erythema may occur in an acute or in a chronic form.

Acute Syphilitic Angina often appears at the same time with the first cutaneous manifestation; but it is not of such common occurrence as the latter affection. The patient complains of uneasiness, soreness, or more or less pain in the throat, especially on swallowing. On examination, the mucous membrane of the throat is found to be red and swollen, and these appearances may be of a superficial and slight character, or indicative of a more intense form of inflammation. The soft palate is especially implicated, and the redness generally extends in a uniform manner over the pillars of the fauces, tonsils, and back of the throat. The inflammation sometimes extends to the Eustachian tube, causing deafness and noises in the ears. Extension to the larynx may take place, and in consequence hoarseness or loss of voice will result. After continuing in this state for a day or two, the redness becomes less marked; the swelling increases and the mucous membrane looks dull and somewhat opaque.

These appearances may either subside or become aggravated. In the latter case, the mucous membrane, especially of the more prominent parts, such as the pillars of the fauces and the velum, becomes still more swollen, and the latter structure is found stiffened and fixed by the infiltration. The tonsils are swollen and project into the throat as hard nodulated swellings, covered with more or less secretion. Small vesicles make their appearance on the surface of the inflamed mucous membrane. These consist of the inflamed and distended follicles, and are often converted into small ulcers. The surface of the tonsils is also prone to become ulcerated, and in these parts the process may extend to a considerable depth. Ulcers of the velum sometimes extend through its substance, and lead to perforation.

Diagnosis. — The symptoms of syphilitic angina closely resemble those of ordinary catarrhal inflammation of the throat. An abrupt line of demarcation is to some extent characteristic of the former affection, but the diagnosis will depend mainly upon the history of the case and the co-existence of other symptoms. Glandular enlargement will invariably be present, and in most cases there will be a roseolar or papular eruption on the skin. The angina of scarlatina is ordinarily accompanied by a more severe degree of fever.

Papular Eruptions, Mucous Plaques, or Mucous Tubercles, on the mucous membrane of the mouth, vary in form according as they are developed from normal papillæ, or result from infiltration of the follicles. In the former case they constitute firm elevations, resembling small warts; in the latter, they consist of roundish or irregularly shaped nodules. The arches of the palate, the tonsils, and the inner surface of the cheeks are the parts most commonly affected. These structures are usually swollen and painful before the papules appear; but the latter may sometimes be found in the absence of any other local symptoms. If the inflammation be of a diffuse character, the papules may be scarcely recognisable. They are, as a general rule, most conspicuous, and often confluent, on the velum and anterior arch of the palate. As the case proceeds, the papules may disappear by resolution, with some amount of superficial disintegration in which the epithelium is converted into opaque grey patches. Superficial erosions, or even ulcers, are often caused by the detachment of these patches, and when the papules are confluent, ulcers of considerable size may be thus originated. Such ulcers are frequently seen on the tonsils, and they give rise to much pain, swelling, and difficulty of swallowing. The ulcerated surface is also covered with more or less epithelial débris, the decay of which communicates a foul odour to the patient's breath. These ulcers are very rarely seen on the pharynx.

It is necessary here to point out that a form of mercurial stomatitis occurs, which is very liable to be mistaken for mucous plaques due to syphilis. If this accident should occur, and mercury is pushed for what is looked upon as a syphilitic manifestation, the consequences may be somewhat disastrous. So, too, ulcerations due to syphilis may be blended with mercurial ulcers and further complicate the diagnosis. The mercurial ulcer may occur upon the surfaces of the tongue, cheek, gums, and palate. The edges are more irregular than in the syphilitic variety, the base has a sloughy appearance, and the ulcer is, for the most part, irregularly deep. Moreover, there is generally some swelling of the gums and increased flow of saliva.

Gummatous Tubercles or Nodules may be developed in several parts of the throat; but the hard and soft palate (see Pl. XV., Fig. 3), the uvula and the tonsils are their most frequent seats. Gummatous formations in these parts may be either of a circumscribed or of a diffuse character, and they belong to the later stages of syphilis. Their development is attended by little or no pain. At one or more spots, a small nodule makes its appearance, or the mucous membrane becomes reddened and thickened over a small portion of its area. The infiltration sometimes takes place in the submucous tissue. These nodules and infiltrations rarely become absorbed; molecular disintegration with ulceration is the most frequent course. The form of the ulcer varies, according as the process begins on the surface or in the interior of the nodule. In the former case the ulcer will be of a superficial character, with infiltrated edges and base; in the latter, a cavity is formed, much more extensive than the superficial opening. Ulceration due to gummata in the structures of the mouth and throat is often of a very serious and rapid character, and leads to such consequences as loss of the soft palate, caries of the bones in the roof of the mouth, destruction of portions of the tongue, etc. Gummata in the hard palate sometimes give rise to ulcers which become confluent and extend over the whole surface. Necrosis of the subjacent bones is the almost inevitable result. If the process commences in the submucous tissue of the hard palate, the disintegration is apt to extend in both directions, and the bone becomes perforated.

In the soft palate and pillars of the fauces gummatous formations occur in the loose connective tissue. One or more nodules make their appearance, the part looks red and swollen, and the patient complains of pain and difficulty in swallowing. The nodules are sometimes developed on the posterior aspect of the soft palate, and may elude observation for some time. Suppurative disintegration is the ordinary course, and the process usually commences in the interior of the nodule. The ulcer thus formed is often funnel-shaped, and perforation, with partial or complete destruction of the soft palate and of the pillars of the fauces, is a frequent result. Gummatous formations, owing to the ulceration, loss of tissue, cicatrisation and contraction to which they give rise, lead to serious changes in the structures of the throat. The most common among these are partial or entire loss of the soft palate, adhesions between its border and the surrounding parts, and contraction of the arches of the palate and of the posterior nares.

Gummatous formations in the tonsils cause these organs to be much swollen, sometimes to such an extent that they meet in the middle line. In such cases, speaking becomes very difficult, and hearing is also interfered with owing to pressure on the openings of the Eustachian tubes. As occurs in other parts, the swelling terminates either in resolution, or in suppurative disintegration and ulceration.

Syphilitic Affections of the Pharynx.—Erythema, papular eruptions, and gummatous formations occur in the pharynx. There is, however, nothing peculiar in the appearances presented by the two former affections. They are less common in the pharynx than in the soft palate and tonsils, where they often give rise to ulceration. On the other hand, the posterior wall of the pharynx is frequently the seat of ulceration, due to gummata. These growths are developed in the mucous membrane and submucous tissue on each side of the median line, and at a little distance from it. The resulting ulcers are of various sizes, and exhibit a marked tendency to spread, especially in debilitated subjects. The acts of swallowing and speaking are performed with pain and difficulty; there is frequent and troublesome cough, and more or less profuse sero-purulent or sanious expectoration.

Necrosis of the subjacent vertebræ, followed by inflammation of the spinal meninges, has been known to result from gummatous ulceration of this part. The ulcers heal but slowly, and the contraction of their cicatrices may seriously impair the function of the throat. More or less difficulty of breathing and dryness of the throat, owing to destruction of many mucous follicles, are frequently complained of. If the mischief has extended to or from adjacent parts great loss of tissue may result, and adhesions will probably be formed, whereby the size of the cavity will be much diminished, and its shape considerably altered. The Eustachian tubes may become closed, and adhesions between the velum and the posterior wall of the pharynx may completely shut off the cavity of the nose from that of the mouth. A very marked case of this kind has been reported by Coulson.* The patient was a man, æt. 27, with extensive syphilitic ulceration of the posterior wall of the pharynx and border of the soft palate. Syphilis had been contracted five years previously; sore throat and rheumatic pains had been prominent symptoms, but no cutaneous eruption could be remembered. A few weeks after the ulceration appeared it was found that the soft palate had become adherent to the back of the pharynx, forming a continuous vault. There was nasal voice, oral respiration, and total loss of smell and taste. The adhesions were too strong to be broken down; separation by dissection would probably have been followed by reunion; an incision was therefore made through the soft palate from right to left, leaving a portion, half-an-inch wide, attached to the hard palate. The part adherent to the pharynx was then torn away; it was found to be very thick and fleshy. Immediate relief followed the operation, and the wound cicatrised after threatening to slough. Contraction taking place, a plug of lint with a piece of quill in the centre was introduced into the opening. A year later it was reported that the communication still remained open, and that great benefit had resulted from the operation.

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* "Lancet," Nov. 15th, 1862.

Ulcers caused by the disintegration of gummatous growths sometimes occur on other portions of the pharynx. These may be seated so low down as to require the laryngoscope for their detection; or the indurated edge of the ulcer may perhaps be felt by the finger. The patient complains of dryness and soreness of the throat, and more or less pain on swallowing. If the ulceration extends to the larynx, breathing and speaking will be interfered with. Small ulcers may heal without giving rise to any further symptoms, but the cicatrisation of large ulcers is certain to produce more or less distortion and constriction of the cavity, and impairment of its function. As a matter of course severe ulceration of the pharynx is attended with febrile symptoms and other evidences of debility.

Treatment.—Constitutional treatment is, of course, required for these affections of the mouth and throat. Mercury must be administered for those of a secondary character, and the ulceration resulting therefrom; while iodide of potassium is indicated for gummatous growths and their consequences. The swelling and pain of the early stage of the angina may be relieved by the inhalation of steam and warm compresses to the throat. Much may be done by prophylaxis to prevent the troublesome mouth-ulcerations which are so frequently the concomitant of secondary syphilis, and at the same time to ward off the ill effects of the mercurial treatment. All tartar should be removed, and decayed teeth either stopped or extracted, as they are frequently the starting point of ulceration. The best plan is to insist upon the patient's visiting the dentist, who should, of course, be informed of the nature of the case, so that he may take necessary precautions to sterilise his instruments after use. It is very important that whilst the patient is under mercury, the teeth should be well brushed at least twice a day—in fact, thorough hygiene of the mouth should be practised, and the patient will after a little time find the comfort and benefit of the course recommended. With regard to the local treatment in subsequent stages, ulcers about the mouth should be touched occasionally with nitrate of silver, or with a camel-hair brush dipped in a strong solution of sulphate of copper. A gargle or mouth-wash containing chlorate of potash, borax, or alum should also be freely used every three or four hours. "Pastilles" containing chlorate of potash are very efficacious in these throat-affections, and are more palatable than the lozenges of the Pharmacopœia. Corrosive sublimate gargle, $\frac{1}{8}$ gr. to 1 oz., forms a good antiseptic mouth wash. Peroxide of hydrogen too is useful in some superficial ulcerations where the soreness is pronounced. When the ulceration is extensive, and situated at the back of the throat, a strong solution of nitrate of silver should be applied by means of a spray-producer, or the part should be painted over with a solution of the perchloride of mercury (2—4 grs. to ℥j). When necrosis has taken place, or when, under other circumstances, the secretion is very abundant and fœtid, a sulphurous acid gargle (ʒss to ℥j) or a gargle of the Liq. Sodæ Chlorinatæ will form the best disinfectant; here, of course, the iodides and not mercury must be given.

CHAPTER XI.

SYPHILITIC AFFECTIONS OF THE TONGUE.

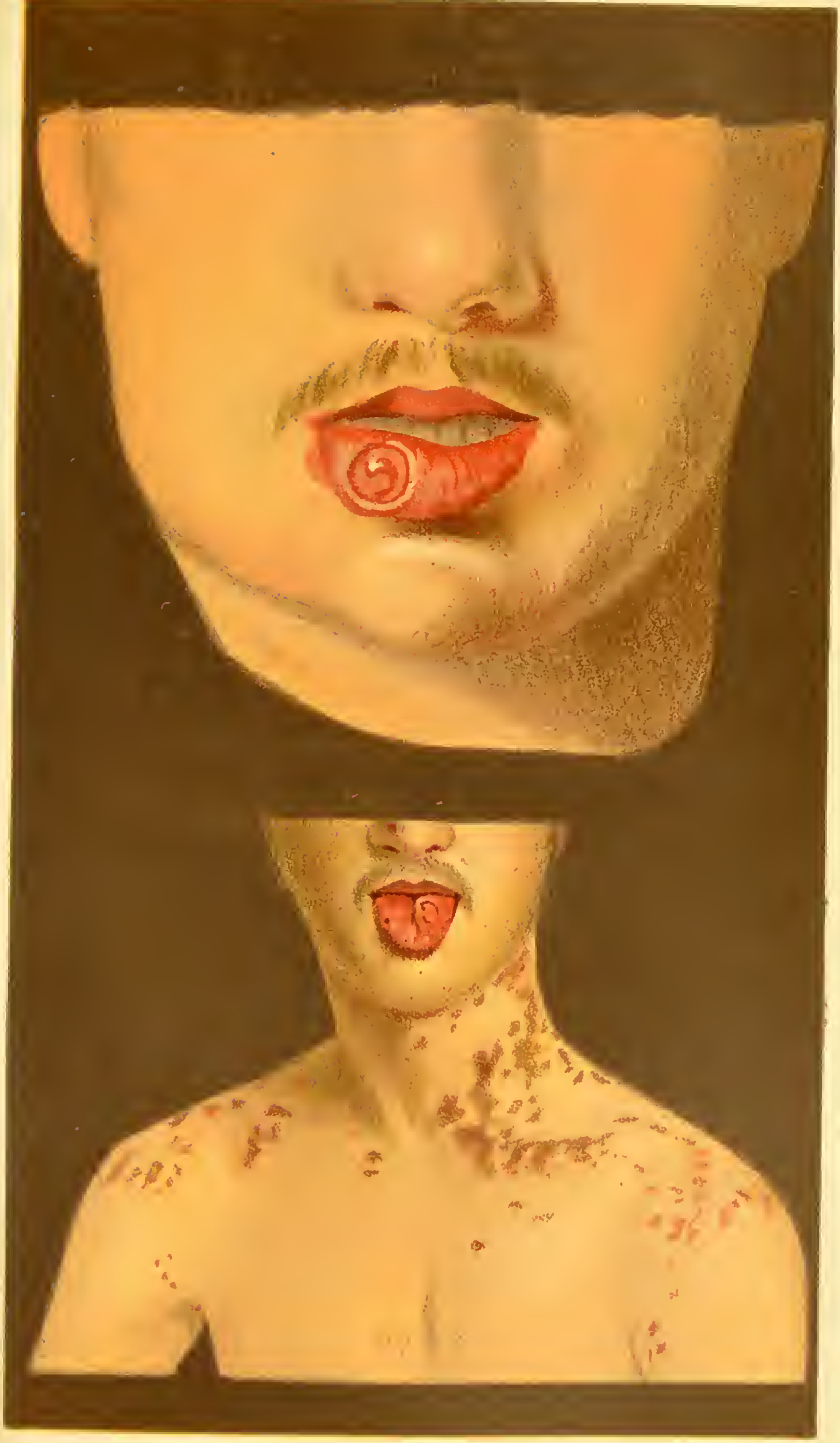
The tongue may be affected both in the earlier and in the later stages of syphilis, and as a general rule, the lesions are well marked. The affections connected with the secondary stage consist of mucous papules and their modifications; while induration and gummatous formations are characteristic of the tertiary stage. Primary sores are sometimes found on the tongue (see Pl. XIV., Fig. 2). The lesion is generally single, it possesses well-marked induration, and is accompanied by a similar condition of the glands under the angle of the mandible.

Mucous Papules occur on the dorsum of the tongue, especially at the borders and towards the apex (see Pl. XV., Fig. 1). Their development is usually simultaneous with that of a cutaneous papular eruption, and of similar lesions in the mouth and throat. They form little flattened elevations, covered at first by a pearly epithelial pellicle, the speedy detachment of which causes the papules to appear as bright red erosions. Owing to the irritation to which they are subjected by the movements of the teeth during mastication, etc., their shape and appearance are liable to become much altered. Later on in the course of the disease the tongue is the principal seat of a condition which is sometimes called *psoriasis linguæ;* but the term is

EXPLANATION OF PLATE XIV.

Fig. 1. Hard chancre of lip.

Fig. 2. Hard chancre of tongue with macular syphilide on neck and shoulders.



Harkart Lit.

EXPLANATION OF PLATE XV.

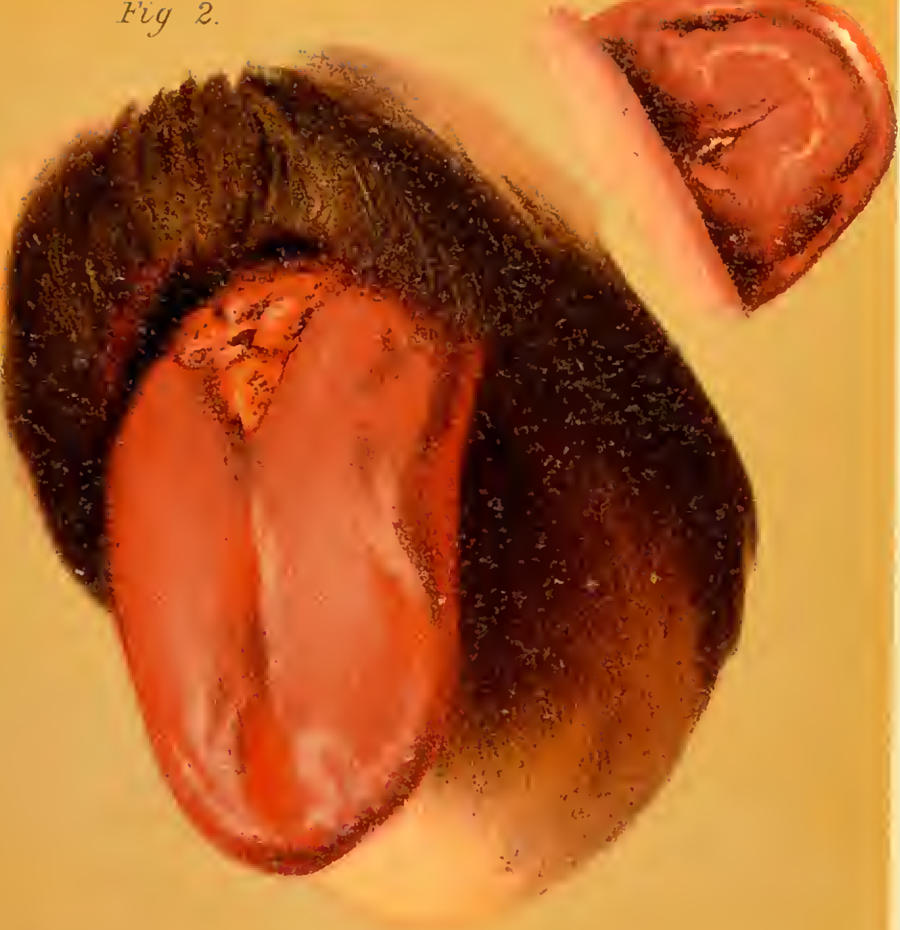
Fig. 1. Tertiary ulceration of soft palate.

Fig. 2. Papillary growths in centre of posterior part of the tongue, illustrating overgrowths the result of secondary syphilis.

Fig. 3. Mucous patch on tongue.

Fig 2.

Fig 3.



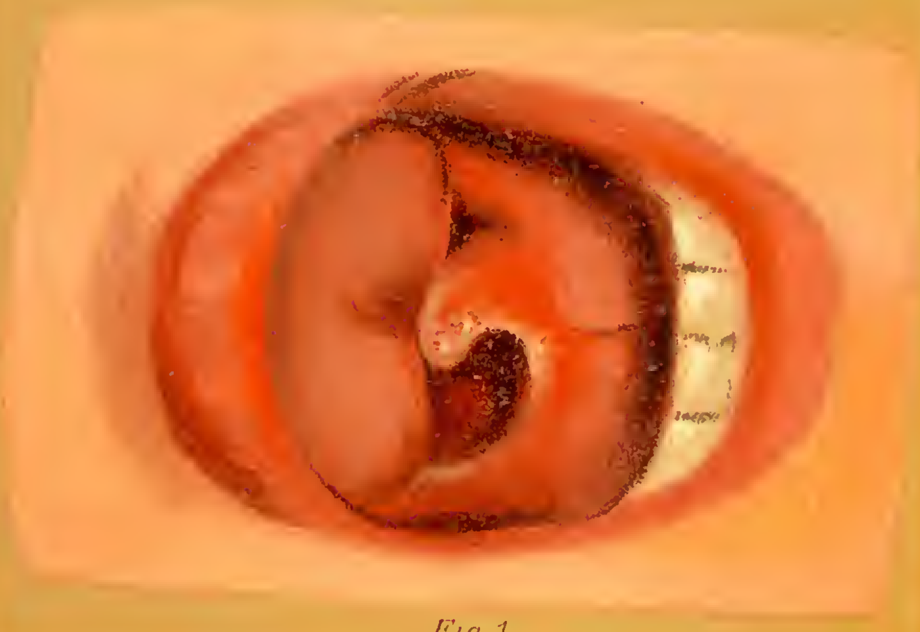


Fig 1.

Hanhart lith

not a happy one: the affection is best known as *syphilitic leucokeratosis*, or *syphilitic leucoplakia.* The tongue assumes a dull-grey, rough appearance; its surface is dotted over with closely-set, hair-like, and penicillate projections, scattered among which are round isolated spots, presenting absolutely smooth surfaces. Besides these appearances there are numerous superficial furrows, some longitudinal, others more or less transverse with yellowish or reddish edges, often tinged with blood. The thread-like projections consist of the elongated filiform papillæ, which are swollen and much increased in size. The intervals between them are filled up by accumulations of epithelial cells and débris. The papillæ circumvallatæ are also enlarged, and sometimes excoriated, and the surface behind these is thickly coated. In well-marked cases the entire papillary structure of the tongue is the seat of congestion and infiltration; increased formation of epithelium, which subsequently becomes loosened and detached in shreds, takes place over the entire surface. The fungiform papillæ stand out as little red nodules. The sides of the tongue are marked by the teeth, and are generally excoriated.

If the above-described condition becomes chronic, as it is very apt to do, it results in the development on the surface of the tongue of roundish patches of altered epithelium, separated by smooth bald portions of the surface, or by projecting papillæ. The patches are at first glistening, pearly and opaline, flat and smooth; later on, as the lesion increases at the periphery, it thickens and becomes fissured in places, or the patches become separated from each other by fissures. The fissures, which are due to the induration of the epidermis, often extend deeply into the organ; their edges are raw and ulcerated, and bleed freely, the condition being aggravated by the movements of the tongue. As a final stage, consequent upon detachment of the altered epithelium, the dorsal surface of the tongue may become smooth and glistening, all trace of papillary structure being obliterated. Such cases run a very tedious course, and any slight improvement is apt to be followed by relapse. This condition, like all forms of ulceration of the tongue and throat, is much aggravated by smoking, and in treating these cases it must be remembered that, owing to the predisposition the mucous membrane of the tongue has in syphilitics to these changes, it is next to impossible to cure the condition so long as smoking is persisted in. This change sometimes extends to the lips and internal surface of the cheeks. Syphilitic leucokeratosis is sometimes confounded with leucoplakia of non-syphilitic origin, which it very much resembles, and a history of a previous syphilitic infection is often our only guide.

Epithelial cancer of the tongue has been known to originate in syphilitic affections of the organ; indeed, leucokeratosis is often the starting-point of this disease. There is no necessary connection between syphilis and cancer, and it cannot be admitted that, in a general way, the former is a predisposing cause of the latter. The elements of epithelioma are, however, derived from the epithelium of the skin and mucous membranes, and some external source of irritation often appears to be the exciting cause of the disease. In syphilitic "leucokeratosis" of the tongue, epithelial proliferation is already present, and the affected part is constantly exposed to irritation.

Minute Anatomy (See Plate XVI., Figs. 1 and 2).—The changes which take place in the first stages of syphilitic leucokeratosis are thickening of the epithelium over the papillæ, which are infiltrated with small

EXPLANATION OF PLATE XVI.

Fig. 1. Minute anatomy of syphilitic leucokeratosis of the tongue, showing thickening of superficial epithelial layers and small cell infiltration.

Fig. 2. Deeper layer of the same section, showing small cell infiltration, and commencing epithelial nests—early epithelioma.

Fig. 1.

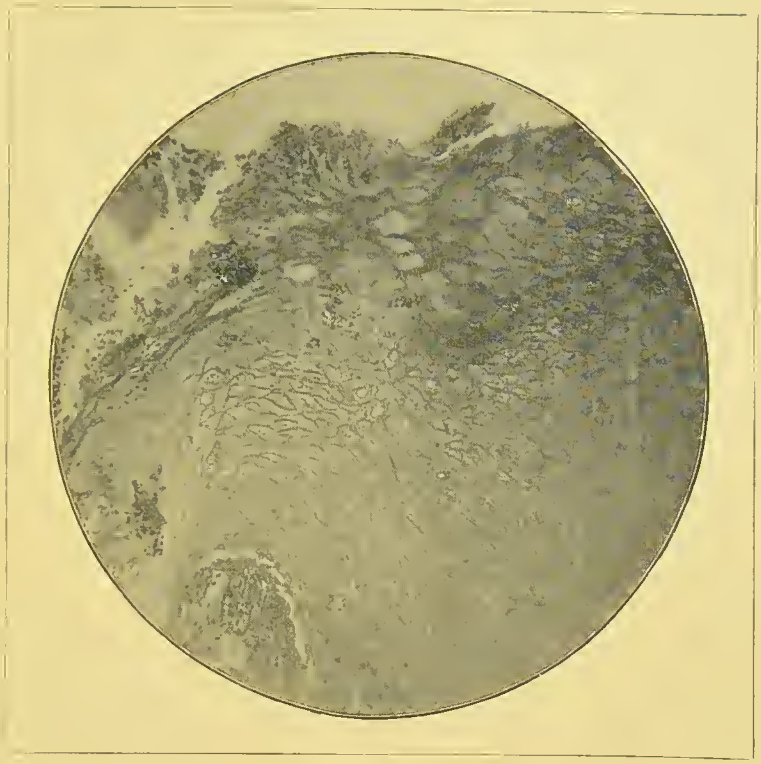
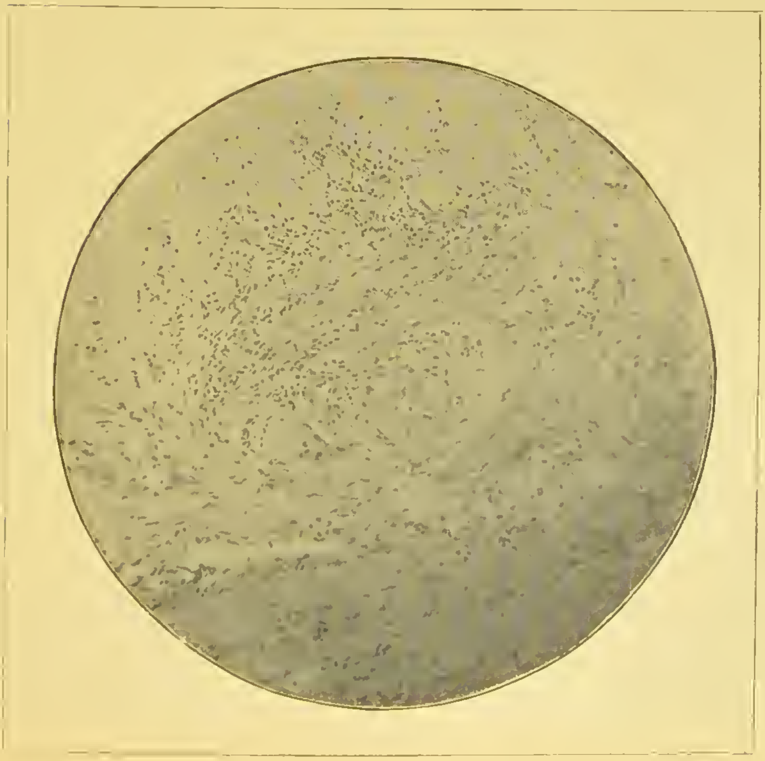


Fig. 2.



round cells; the thickened epithelium later on becomes horny and opaque, and coalescing with neighbouring cells forms the white, milky patches. Still later, the corium is infiltrated with cell-growth, which causes atrophy of the papillæ, and fissures form in the whitened patches. If epithelioma supervenes, a section will probably show all the above stages; at the periphery of the patch, the first stage of thickened epithelium will be seen, and as the centre is approached the changes increase gradually, and at the centre itself, which is the oldest part of the patch, the rete cells are found proliferating and forcing themselves in columns into the submucous layer, the columns being surrounded by a small cell-infiltration. Kaposi compares the development of epithelioma in such cases to that which sometimes occurs in connection with simple warts. The treatment in these cases consists in abstention from tobacco, spirituous liquors, and highly-spiced food, thorough mouth hygiene (see p. 171), local mercurial lotions, and mercury internally. The hypodermic injection of the sozoiodol of mercury or of sal alembroth is very efficacious in this class of cases, as the subjects, unfortunately, frequently neglect to take medicine when prescribed in the ordinary way.

Induration of the Tongue, occurring in the course of the later stages of syphilis (glossitis syphilitica sclerosa), may be either diffused or circumscribed, and may affect either the superficial or the deeper parts. When the whole or the greater part of the organ is involved, it becomes enormously swollen, red, and tense, but the pain is inconsiderable; the mucous membrane becomes perfectly smooth, and the papillæ are no longer visible. Half the organ may be thus attacked while the other half remains normal. If the inflammation involve circumscribed portions of the muscular structure, one or more hard nodules can be felt by the finger. These, as well as the diffused indurations, may altogether subside, or may lead to further changes in the structure and appearance of the tongue. In the latter case, after the condition has existed for some time, the newly-formed fibrous tissue begins to contract, and the tongue becomes puckered or wrinkled. If the process has been superficial, the changes may be of a slight character, but if the deep parts of the tongue have been extensively involved, the organ will assume a more or less lobulated appearance. The lobules are separated in various directions by deep furrows; those near the median line of the organ run parallel with it, while those near the margins take a transverse direction. The fibrous tissue bounding the lobules may become almost cartilaginous.

Gummatous Tumours are sometimes found in the tongue; they belong, like the indurations, to the later stages of syphilis. They are usually single, but are sometimes multiple; they are found both in and beneath the mucous membrane, and in the substance of the organ, most commonly near the middle of the dorsum, but they may occur at the margin. A gumma is firm and elastic to the touch, and its size varies from that of a small pea to that of a nut. If superficial, it forms a visible prominence, but if deeply seated, it may give rise to the appearance of a diffused swelling. Sometimes two or more gummatous tumours unite and form a large mass. Their development is not attended by any pain; the patient may complain that his tongue feels stiff, and that speaking is somewhat difficult. These growths usually disappear under proper treatment, but if left to themselves they are apt to result in the formation of ulcers. Disintegration may commence either on the surface, or in the interior. In the former case an irregularly shaped ulcer appears, with raised, firm, infiltrated, jagged, and frequently undermined edges, and a greyish indurated base. If the disintegration commences in the centre of a growth of some size, the parts covering it become raised, distended, and softened. A small opening then appears, and the contents of the gumma are gradually discharged after the manner of an abscess. The opening remains small and its margin is stiff and indurated; it leads into a cavity of some size, containing greyish-yellow, caseous débris mixed with pus and blood. After a while the discharge ceases, granulations spring up from the bottom of the ulcer, and the orifice finally closes, leaving a more or less marked and puckered cicatrix. When the ulcerative stage has been reached, the pain is very considerable. Gummatous ulcers have been observed to become cancerous, and epithelioma sometimes follows gummatous formations in this organ. A case of this latter kind occurred some years ago in my practice. The patient, a man aged 50, with a history of syphilitic infection dating some twenty-five years back, presented himself with gummatous growths in his tongue. Five months afterwards, I detected well-marked epithelioma on one side. It was accompanied by the usual symptoms, viz., pain and inability to eat solid food. Rapid increase taking place, one-half of the affected organ was removed, with a satisfactory result.

Lesions of the tongue due to cancerous or tubercular deposits sometimes closely resemble those just described, and the diagnosis is often difficult. Cancerous infiltration gives rise to nodules generally harder and firmer than gummata, but the exact amount and the consistence of the infiltration may be very difficult to determine, owing to the development of inflammatory swelling. The development of cancer is generally attended with much pain, often shooting towards the ear, and the progress is more rapid than that of gummata. When the ulcerative stage has been reached, the appearances are very similar in the two cases. In syphilis, however, the swelling of the neighbouring glands is rarely so considerable as in malignant disease, where the submaxillary gland may become as large as an ordinary egg. Disintegration of a gummatous nodule usually begins in the interior; in cancer the ulceration commences on the surface. The base of a gummatous ulcer is generally less vascular than that of a cancerous one, which always bleeds freely. An ulcer surrounded by an induration which does not progressively extend, is likely to be of syphilitic origin. In any doubtful case the effect of full doses of iodide of potassium should be tried. Under the use of this remedy, syphilitic disease of the tongue rapidly improves, but no effect is produced in cases of carcinoma. In cases of epithelial cancer of the tongue the appearances may closely resemble those due to syphilitic disease. Zeissl states that the most important diagnostic sign of epithelioma is the sebum-like plugs of curdy material which may be pressed out from the mucous membrane. The tongue is occasionally the seat of tubercular deposit, and ulceration due to this cause is sometimes met with. Tubercular ulcers are, however, associated with tubercular disease in other organs; they are generally seen near the tip of the tongue, and they are not at all influenced by anti-syphilitic treatment.

The following table shows the different characteristics of the three principal varieties of ulcers which attack the tongue, and may be an aid to diagnosis:—

	GUMMA.	EPITHELIOMA.	TUBERCLE.
Age . . .	Occurs at any age.	Generally after middle age.	Early adult life generally.
History . .	Evidences or history of syphilis.	May or may not have had syphilis.	No history of syphilis.
Situation .	Generally on dorsum and behind.	On margin or under surface.	Near tip.
Number . .	May be single or multiple.	Single.	Single.
Preceding lesion . .	Lump in substance of tongue.	Wart or leucokeratosis.	None.
Commencing ulceration	Generally begins in centre of gumma, but external irritation may determine superficial ulceration.	Starts superficially, accompanied by much induration.	Starts superficially; very little induration.
Progress . .	Rapid.	Not very rapid.	Slow.
Appearance	Crateriform ulcer, edges undermined and abrupt; sloughy base.	Shallow, with irregular, hard, elevated edges. Base red.	Very shallow, slanting edges, pale pink base.
Pain . . .	Only on motion.	Spontaneous, shooting to ear.	Tender.
Glands . .	Not involved.	Characteristically involved in later stages.	Frequently enlarged.
Iodide test .	Positive.	Negative.	Negative.

Local Treatment of Mucous Tubercles of the Mouth and Tongue.—A very good local application consists of one part calomel to four or five parts powdered gum tragacanth, but in chromic acid we have a very efficient and rapid means of cure. A solution of 10 grs. of the acid to an ounce of water is brushed over the patches, and produces very rapid healing. A stronger solution (1 in 10 to 1 in 3) may be carefully brushed on the patches in leucokeratosis with good effect. After allowing the concentrated solution to remain on a few moments, it should be washed off with a solution of acetate of alumina.

The constitutional treatment of the syphilitic lesions of the tongue is the same as that of similar affections of the mouth. Iodide of potassium must frequently be given in large quantities, and, if ulceration is present, the local treatment by the means already suggested must be actively carried out. If a gumma is situated at the side of the tongue, any jagged or decayed tooth near it should be removed, as this source of irritation is very likely to determine ulceration. After the gumma has disappeared or the ulcer healed under the iodide treatment, a course of mercury should be advised.

In some cases of undoubted tertiary ulceration of the tongue the iodide appears to do no good, and mercury only to aggravate the disease. I have, under these conditions, prescribed a course of Zittmann's decoction with great benefit. But the surgeon must very carefully consider these cases, as if the iodide does no good the possible supervention of epithelioma will always suggest itself; and unless a correct diagnosis is made, valuable time may be lost.

CHAPTER XII.

SYPHILITIC AFFECTIONS OF THE LARYNX.

Affections of the larynx occur both in the early and in the later stages of syphilis. In the former the mucous membrane is especially implicated; in the latter the morbid process invades more particularly the cartilages, fibro-cartilages, and ligaments. The various lesions may be described under the headings of acute and chronic catarrh, papules, gummata, and ulceration.

Laryngeal Catarrh occurs in the early stages of constitutional syphilis, and is often coincident with a cutaneous erythema. The anatomical appearances and the symptoms resemble those of the same affection due to any other cause. The mucous membrane, as seen with the aid of the laryngoscope, is red and swollen. According to the stage of the disease, the surface is either drier than natural, or is covered by secretion and detached epithelial cells. The throat and nasal passages are often similarly affected at the same time. The complaint is generally obstinate, especially if treated as an ordinary catarrh. The diagnosis must be made by the aid of co-existing symptoms. If the catarrh be due to syphilis, there will be the history of a recent infection, the presence of indurated glands, and probably of a cutaneous eruption.

Mucous Papules are of rare occurrence in the larynx, but they are sometimes found during the first twelve months on the margin of the epiglottis, on the cartilages of Santorini, on the arytenoid cartilages, and upon the aryteno-epiglottidean folds. As seen with the laryngoscope, they appear as small roundish growths, either distinctly circumscribed or less defined, reddish in colour, and not very prominent. They sometimes present a whitish appearance owing to thickening of the epithelium. More or less catarrh accompanies the development of the papules. If the epithelium becomes detached, the growths project as red points, surrounded by viscid secretion. Papules are very rarely found on the vocal cords. In the late secondary stage, a chronic laryngitis is seen occasionally, which shows a great tendency to relapse. A laryngoscopic examination reveals a ragged ulceration of the vocal cords and other parts, due to the disintegration of a mucous papule. These ulcerations are usually multiple, and are very liable to recur; when present, they are generally accompanied by mucous patches elsewhere. They result from a small celled infiltration into the corium and papillæ, hence they do not occur below the vocal cords. The ulcerations may be the seat of small warty growths. When the vocal cords are affected, the free margin has a characteristic jagged edge.

Tertiary Lesions are much more frequent in the larynx than papules, and they often lead to serious destruction of tissue. They occur either in the form of isolated nodules or as a more or less diffuse infiltration, in the epiglottis, the aryteno-epiglottidean folds, the arytenoid cartilages, and on the true and false vocal cords. In the epiglottis the nodules either stand out as distinct projections, or cause the part to appear uniformly thickened. The same appearances are observed on the aryteno-epiglottidean folds, and on the mucous membrane of the arytenoid cartilages. Gummatous infiltration affecting the vocal cords gives rise to considerable swelling and difficulty of breathing. The cords come into contact anteriorly, and only a very small space is left for the passage of air. Infiltration of the false vocal cords leads to swelling and redness of the parts. The distinct nodules, which are found in the above-mentioned structures, are equal in size to a millet seed, or even larger, and are dusky-red or yellowish-red in colour. As occurs in other parts, these infiltrations and isolated growths may either become absorbed, or may undergo disintegration and ulceration. Such ulcers are most frequently seen on the epiglottis. They are surrounded by a swollen and reddened margin, and are at first circumscribed, but they exhibit a tendency to increase in depth, and they sometimes perforate the epiglottis destroying considerable portions of its substance. The ulceration may also extend to the adjacent structures. On the true vocal cords the process has a tendency to spread from before backwards, destroying the mucous membrane and portions of the cords themselves. The ulcers may be superficial, serpiginous, or deep; they are more or less irregular in form, and are covered with a tenacious purulent secretion. They are also found in the trachea, especially at its bifurcation, and in the bronchi. Superficial ulceration heals without noticeable cicatrix; but the deep ulcerations produce white, lustrous, stellate and retractile cicatrices, resembling those after burns. Adhesions frequently take place between raw surfaces. The vocal cords may thus become adherent almost to any extent. Very frequently this union is rapid; thus the epiglottis may become adherent to the aryteno-epiglottidean fold, to the pharyngo-epiglottidean fold, or to the wall of the pharynx. The ventricular band of one side may become adherent to the vocal cord, or to its opposite fellow, or the opposed surfaces of the mucous membrane over the arytenoid cartilages may become fused together. There may be hypertrophy of the mucous membrane, connective tissue, or muscular substance, causing more or less stenosis. Stenosis may also occur from the development of fungating growths. Perichondritis and chondritis, with cartilage-necrosis, may occur as in tubercular laryngitis.

Myopathic paralyses may occur in the tertiary or in the late secondary stages. These are generally unilateral, and the left side is the more frequently attacked. They may supervene quite suddenly after exposure to fatigue, cold, or damp. Paralysis may be due to compression of the motor nerve by an enlarged bronchial gland, or to neuritis or to cerebral lesions.

Syphilitic ulceration of the larynx gives rise to various symptoms, among which the most common are—a feeling of tickling or soreness in the throat, with hoarseness or more or less loss of voice; dyspnœa with a harsh barking cough; and mucous or purulent expectoration, perhaps tinged with blood. Difficulty of swallowing may be also complained of. In cases in which the cartilages are involved, œdema of the glottis is especially apt to occur. The symptoms vary according to the position and extent of the ulcers. Swallowing is not interfered with unless the ulceration extends to the pharynx. Such extension is especially likely to occur when the lesions are situated on the posterior wall of the larynx. Pain is generally absent until ulceration sets in, when it becomes severe, shooting to the ears, and may be so considerable as almost to prevent the patient from swallowing; the difficulty being increased by spasm of the pharyngeal muscles. The hoarseness and other changes in the voice were formerly termed *raucedo syphilitica*, but there is nothing peculiar in the symptoms; they are due to swelling or partial loss of the vocal cords, or to diminished mobility, owing to impairment of the functions of the muscles. The expectoration is usually scanty, muco-purulent in character, and only tinged or streaked with blood. If necrosis of the cartilages has taken place, fragments of these structures may be found in the expectoration. The amount of dyspnœa varies according to the structural alterations. If œdema of the glottis occurs, symptoms of suffocation soon become prominent, and the patient will probably die, unless relieved by tracheotomy. Pieces of necrosed cartilage should be removed, for fatal asphyxia has been caused by a detached fragment becoming lodged in the air-passages. As a secondary result of necrosis of the cartilages, phlegmonous inflammation of the surrounding parts has been observed to occur.

The ultimate results of syphilitic disease of the larynx are often of a very serious nature, as stated before. Cicatrices left after syphilitic ulceration may considerably diminish the size of the cavity and impair the functions of the various parts of the organ. In cases in which the epiglottis is completely destroyed, swallowing may still be practicable, but the passage of foreign substances into the larynx will often cause much distress. Adhesions may be formed between the false vocal cords and the aryteno-epiglottidean folds, while lesions of the mucous membrane of the true vocal cords may lead to adhesions and contraction of the glottis. Extensive cicatrices on the posterior wall of the larynx may prevent any movement between the cricoid and arytenoid cartilages. Cicatrices due to ulceration are also found in the trachea. These consist of whitish tissue connecting the more or less destroyed cartilages. Inspiration in such cases becomes difficult, owing to collapse of the walls of the trachea, which may be also much narrowed and diminished in length.

In the later stages of tertiary syphilis, there is occasionally developed a fibroid degeneration which causes stenosis, both by contraction of the new tissue and by the formation of fibroid tumours. These tumours are frequently seen on the epiglottis and aryteno-epiglottidean folds. They are very dense and hard, and liable to ulcerate, with consequent increase of fibrous tissue and contraction.

With regard to *diagnosis*, other forms of ulceration—viz., tubercular and cancerous—occur in the larynx. Ulcers due to tubercles, like those connected with syphilis, are especially prone to occur in those parts of the larynx which are most copiously supplied with glands. The margins of a syphilitic ulcer are, however, red and congested, while in tuberculosis the mucous membrane, even in the neighbourhood of the ulcers, is generally very pale, and is studded over with small yellowish or grey nodules, consisting of the infiltrated glands. The ulceration results from the disintegration of these nodules. In either affection the diagnosis will be assisted by the previous history. In a doubtful case the nature of the growth may be determined by a microscopical examination of a small portion that has been removed. If the laryngeal affection is accompanied by symptoms of tuberculosis of the lung, its nature will be tolerably evident, but the possibility of the co-existence of the two diseases must not be lost sight of, for a syphilitic may have tuberculosis, just as a tubercular person may have syphilis, and a syphilitic lesion of the larynx may be the seat of a subsequent epithelioma. In doubtful cases, antisyphilitic remedies should be tried. In cases of advanced ulceration, with swollen and distorted tissues, the diagnosis between syphilis and cancer is sometimes very difficult. The presence or absence of pain is not a positive sign, as it may be absent in carcinoma, and lancinating in syphilis, or the reverse may occur. The clinical and therapeutic history will help, for few nowadays would wait for enlargement of submaxillary and post-cervical glands before making a diagnosis of malignant disease.

Treatment.—This must be of a local as well as of a general character. For the earlier affections, if mercury has been withheld or given insufficiently, its use must be commenced forthwith. Local applications should, whenever possible, be applied to the ulcers, with the view to prevent them from spreading, and to promote cicatrisation. These consist of solutions of nitrate of silver, nitrate of mercury, and chloride of zinc and chromic acid. Iodoform, reduced to an *extremely fine* powder, may be applied by means of an insufflator. Bromide of potassium may be given where there is troublesome spasm of the muscles. In the later tertiary stages, iodide of potassium, either alone or combined with mercury, should be prescribed. Unless the usual doses of iodide appear to be acting well, the drug should be pushed, but the patient should be well watched, as œdema of the larynx may come on rapidly in these cases from large doses of the iodide. Symptoms of œdema may be relieved by the patient swallowing small pieces of ice, and if this should fail, by scarifying the mucous membrane with a well-guarded bistoury. In œdema due to the disease, not of sufficient amount to warrant tracheotomy, $\frac{1}{30}$-grain of sal alembroth injected into the gluteus maximus twice a day for forty-eight hours may be tried. If this fails, tracheotomy had better be done; or if preferred, intubation of the larynx may be tried, but not if there is much accompanying ulceration. Opium will be necessary to relieve pain, and the fœtor of the breath may be corrected by disinfectants—*e.g.*, solutions of carbolic acid or of thymol, applied by means of a spray-inhaler. If the larynx be much narrowed owing to cicatricial contraction, tracheotomy may become necessary, and the permanent wearing of the tube may be required, as these cases are not very amenable to dilatation, but occasionally they have been improved by Schrötter's laryngeal dilator combined with incisions. Contraction of the trachea does not admit of surgical interference, the lesions being most common at or near the bifurcation of the tube.

It has been noticed that after an attack of erysipelas, obstinate cases of tertiary syphilis of the larynx occasionally heal up in a marvellous way, having previously resisted all specific treatment.

CHAPTER XIII.

SYPHILITIC AFFECTIONS OF THE NASAL MUCOUS MEMBRANE.

THE primary sore has occasionally its seat in the nasal passages, and in most of the cases that have been recorded the virus has been conveyed either by an infected Eustachian catheter or a contaminated finger. The initial lesion in this part might be mistaken for lupus or epithelioma, and in doubtful cases the microscope should be called in to aid the diagnosis.

Constitutional syphilis affecting the nasal mucous membrane gives rise (*a*) to catarrh of the part, (*b*) to an eruption of papules, and (*c*) to the development of nodules which may subsequently become ulcerated and cause considerable destruction.

Nasal Catarrh or Rhinitis, in acquired syphilis, appears during the eruptive period. The lower part of the nose is mainly affected. The symptoms resemble those of coryza, and the diagnosis can be established only by the aid of co-existing symptoms. In severe cases the secretion is profuse, and causes much irritation and excoriation of the anterior nares. The sense of smell is not interfered with unless the membrane covering the upper meatus is involved. In this case there is more or less loss of the olfactory sense, and the patients are conscious of a disagreeable odour. If catarrh alone be present the secretion is almost odourless, but if ulcerating papules, or gummata co-exist, a very foul odour will be communicated to the patient's breath and the nasal discharges. The coryza of hereditary syphilis will be described in a subsequent chapter.

Mucous Patches are found at the nasal orifice generally, and are situated partly on the skin and partly on the mucous membrane. They may attain such dimensions as almost to occlude the nares. They are also found on the septum.

The lesions of the tertiary period are—gummata, diffuse gummatous infiltration, and fibroid degeneration. The gummata and diffuse gummatous infiltration are not seen so frequently as in former times. They are generally met with on the septum and floor of the nose, the inferior turbinate bones, and the posterior nares. They appear in the later stages of tertiary syphilis, and often in conjunction with similar growths in other parts. They follow the usual course—viz., that of molecular disintegration and ulceration—and tend to produce considerable destruction of tissue. They also give rise to a copious discharge, purulent in character, and often mixed with blood and débris, and possessing a particularly offensive odour. The discharge forms crusts and plugs which much impede the entrance of air. This syphilitic ulceration is the cause of a very serious form of ozæna. The odour is due to decomposition of the secretion, and, in advanced stages, to caries and necrosis of the bones. In these latter cases the odour is extremely disgusting. On examining the nose, the mucous membrane is seen to be covered with foul-smelling secretion and crusts; if the latter are removed, a bleeding surface is exposed. Ulcers in various stages may also be recognised, especially on the cartilaginous septum, which, as well as the bony partition, is often perforated. If the cartilage is destroyed, the tip of the nose becomes flattened; in other cases a depression is formed between this part and the lower border of the nasal bones, so that the apex is turned upwards. In very severe cases the necrosis may involve the whole of the vomer, the inferior turbinated and portions of the ethmoid, the nasal processes of the superior maxillæ, and the nasal bones. The floor of the nasal cavity and the lachrymal bones may also be implicated; in the latter case dacryocystitis may be a consequence. In the former case a communication is established between the mouth and the nose. Wide-spread destruction of this character is attended with profuse discharge and detachment of many sequestra. The complaint continues so long as any fragments of necrosed bone remain, and its course is often extremely tedious, owing to the number of bones which are liable to become affected. The resulting deformity is considerable, and if the mucous membrane of the olfactory region is much injured by the ulceration, the sense of smell will be permanently impaired, or even completely lost. Ozæna connected with hereditary syphilis will be afterwards described.

Fibroid degeneration of the nose has been described,[*] and is similar to that seen in the larynx. It is met with chiefly in neglected cases, and appears more commonly in men, especially in chronic alcoholics. The turbinate bodies are most frequently affected. They appear either studded with dense yellowish-white sessile masses, or the growths may be pedunculated and resemble fibroid polypi. These masses may ulcerate, and thus become partly destroyed.

[*] "International Journal of Laryngology and Rhinology," 1889.

With regard to the *diagnosis* of a case of supposed syphilitic ozæna in an adult, this must depend upon the history and general appearance of the patient. It may be confounded with tubercular or cancerous ulceration, and the general history will help considerably in forming an opinion; for ozæna, due to syphilis, will nearly always be associated with symptoms of the disease in other parts.

Treatment.—The earlier affections require no special local treatment. Mercury should, of course, be administered, if its use had previously been withheld. When ulceration has taken place, active local treatment must be superadded in order to prevent the extension of the mischief. If the ulcers and crusts are within reach, a solution of carbolic acid in glycerine (one to sixty) should be applied two or three times daily. The vapour of iodine is a useful deodorant. Mercury, in the form of vapour, is the main remedy, together with iodide of potassium internally, with or without mercury. A few grains of calomel should be evaporated on a metallic plate over a spirit lamp, and the fumes directed into the nose by means of a funnel. When the discharge is very profuse and fœtid, the free use several times daily of a solution of the permanganate of potash, by means of a syringe or douche-apparatus, will tend to lessen the fœtor, and the insufflation of iodoform or of benzoate of bismuth will promote healing. In chronic cases iodide of potassium may be substituted for mercurials, and may be combined with cod-liver oil, iron, and other tonics. Sequestra should be removed with great caution, and it is best, as a rule, to let them be washed away with the nasal douche as they loosen. The fibroid masses may be removed with a snare when pedunculated; or with the electric cautery, or with strong chromic acid when sessile.

In cases of syphilitic ozæna, the inflammation sometimes spreads from the mucous membrane of the nose to that of the lachrymal canal. The symptoms are those of dacryocystitis, viz., obstruction to the escape of the tears, epiphora, and swelling or abscess of the lachrymal sac. In other cases the affection of the lachrymal canal is secondary to that of the surrounding bones. If the mucous membrane alone is implicated, the symptoms will probably subside under mercurial treatment; but if the canal becomes closed, and an abscess and fistulæ form, surgical interference will be required. The ordinary operation is that of slitting up the punctum and canaliculus, and passing a probe through the stricture in the nasal duct. If there are evidences of periostitis in the walls of the lachrymal sac and adjoining bones, a free incision should be made through the periosteum. Necrosis of the lachrymal bone and of the nasal process of the superior maxillary may be associated with the suppuration of the lachrymal sac.

CHAPTER XIV.

SYPHILITIC AFFECTIONS OF THE ALIMENTARY CANAL AND OF THE ABDOMINAL ORGANS.

Syphilitic Affections of the Alimentary Canal, other than those of the mouth, pharynx, and rectum, are extremely rare. A few cases of tertiary syphilitic lesions of the œsophagus, stomach, and small intestines have been placed on record. There is, however, no evidence that these parts are affected in the earlier stages of syphilis. Mr. West, of Birmingham,* has reported three very remarkable cases of syphilitic disease of the œsophagus. In one the patient was a girl, aged twenty-one, who had suffered for some time from various secondary syphilitic affections. There were the ordinary symptoms of stricture of the œsophagus; no sound could be passed, and the patient eventually died from exhaustion. The post-mortem examination revealed a constriction of the œsophagus about four inches from its commencement. The constricted portion formed a narrow canal about two and a half inches in length, and barely admitting a No. 4 catheter. The contraction was due to a thickening of the mucous membrane, and to fibrous deposits in the form of bands and bridles. Above this part the tube was much dilated, and the mucous membrane showed many cicatricial marks. Below the constriction the œsophagus was healthy. Evidences of syphilitic disease were found in the liver, and the back part of the throat was the seat of extensive ulceration. The other cases were similar, except that in one the stricture was at the lower part. Cases of a similar character have been recorded by Virchow, Maury of Philadelphia, Clapton, and Hirschfeld, and many other doubtful cases are scattered throughout the journals.

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* "Dublin Quarterly Journal of Medical Science," February and August, 1860.

Two cases of syphilitic disease of the œsophagus have been reported by Dr. Lublinski.* The first of these occurred in a man, aged twenty-nine, with a history of syphilitic infection ten years previously. There was a small scar on the uvula, but no signs of disease in the pharynx. The stricture, which would admit only a small bougie, was at the level of the sixth dorsal vertebra. After continuous treatment for many weeks with iodide of potassium, the difficulty of swallowing subsided, and a bougie could be easily passed through the stricture. In the second case, the patient was fifty-four years of age, and had contracted syphilis twenty-two years previously. There was a hard ulcerated swelling on the left side of the tongue: the pharynx and larynx were healthy. The stricture was found to be at the level of the fifth cervical vertebra. Considerable improvement was produced by the daily passage of bougies and the administration of large doses of the iodide of potassium, but the obstruction was not entirely removed. As a result of the treatment, the swelling of the tongue subsided and the ulcer healed.

It must always be difficult to establish the existence of a causal connection between syphilis and affections of the stomach and small intestines. In this respect the acquired disease differs in a very marked manner from hereditary syphilis. Ulcers of the stomach and small intestines have been noticed in a few cases in which obvious manifestations of syphilis, *e.g.*, gummata, were present in other organs; but the mere co-existence of the two appearances may, at least in some cases, have been merely accidental. Cornil,* however, has recorded a case in which gummata were found post mortem in the stomach and liver. Those in the stomach were situated in the mucous membrane along the small curvature, and consisted of flattened reddish tumours, the largest measuring two inches in diameter. The lymphatic glands at the small curvature were hypertrophied and indurated, and a white, hard, and radiating cicatrix was seen on the peritoneal surface of the stomach. The submucous connective tissue of the stomach generally was much hypertrophied. The symptoms during life were pain, vomiting, and other indications of disturbed digestion. A gummatous tumour existed in the liver. A case of syphilitic duodenal ulcer (cicatrix found on post-mortem examination) was reported some years ago by Dr. Chvostek.† The symptoms were pain, vomiting, and a feeling of constriction, coming on three hours after eating. There was a history of syphilitic infection three years previously.

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* "Berlin. Klin. Wochenschrift," 1883, No. 33.

With the exception of the rectum, and cases of hereditary disease, the intestines are very rarely the seat of syphilitic lesions. A few instances, however, have been recorded, in which gummatous growths, ulcers and cicatrices were found in these parts, associated with decided evidences of syphilis elsewhere. There is nothing peculiar in the appearance of such ulcers and their cicatrices, and they cannot be positively distinguished from those due to other causes. The symptoms also do not present any special character; they consist mainly in diarrhœa, with perhaps a little blood in the stools, loss of flesh and strength, and gradually increasing cachexia. Neither peritonitis nor perforation of the intestine has been observed. In some reported cases in which symptoms of ulceration of the bowels co-existed with evidences of syphilis, the administration of mercurials and iodide of potassium was followed by improvement and cure.

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* "Syphilis," translated by Drs. Simes and White, p. 375.

† "Vierteljahrsschrift f. Derm. u. Syph.," Heft. 1, 1882.

Syphilis of the Rectum and Anus.

The rectum is far more commonly affected by syphilis than any other portion of the intestines, and lesions of this part, viz., ulceration, with or without stricture as a result, occur in the three stages of the disease. Hard chancres may occur at the anal orifice, and in the rectum, and the secretions from condylomata around the anus may set up ulceration in the mucous membrane of the bowel. The presence of the primary lesion at the anal orifice in women may be due to the poison being carried there by a vaginal discharge, or to accidental contact with the male organ; when seen in men it strongly suggests unnatural practices, and when it is situated on the mucous membrane of the rectum, no other explanation is possible. Not only true syphilis, but soft chancres near the anal orifice, sometimes give rise to ulceration, and if extensive, the cicatrices may cause some amount of narrowing at the lower part of the rectum. Gummatous deposits, however, and the ulceration to which they give rise, are the most common causes of syphilitic affections of the rectum.

With regard to the effect of soft chancres, it has been asserted by a few French writers, and notably by Gosselin, that these are the exclusive cause of "syphilitic contraction of the rectum." My own opinion, however, is that the condition in question can be very rarely the effect of soft sores, but I am not prepared altogether to deny the possibility of such a causation, though the evidence brought forward in support of this view is very inadequate, and to my mind unconvincing. The ulceration is described as extending from soft chancres near the anus, or the secretion from these sores may be brought into contact with the mucous membrane of the bowel in another way. The result in either case is an ulcer followed by thickening of the submucous connective tissue. After a time, the cicatrised and thickened portions form a hard ring, which is situated at from one to two inches above the anus. The muscular coat is hypertrophied, and above the constricted portion, the mucous membrane is denuded of its epithelium and glandular layer. The symptoms are—frequent desire to pass stools; discharge of muco-purulent fluid; occasional diarrhœa, loss of flesh and strength and general indications of cachexia. The majority of the cases hitherto reported have occurred in women.

Syphilitic lesions of the rectum may be due (1) to primary ulceration, (2) to mucous papules, or (3) to gummatous nodules or infiltration. With regard to the first cause, a primary ulcer may extend from the vicinity of the anus, or the virus of syphilis may be brought into contact with the mucous membrane of the bowel. Mucous papules are rarely found on the rectal mucous membrane. Condylomata (see Plate XVII., Fig. 2), however, at the margin of the anus are particularly prone to spread, and to become enlarged, ulcerated, and fissured, forming the deep clefts

EXPLANATION OF PLATE XVII.

Fig. 1. Hard chancre of labium.

Fig. 2. Condylomata around anus.

PLATE 17.

Fig 2.

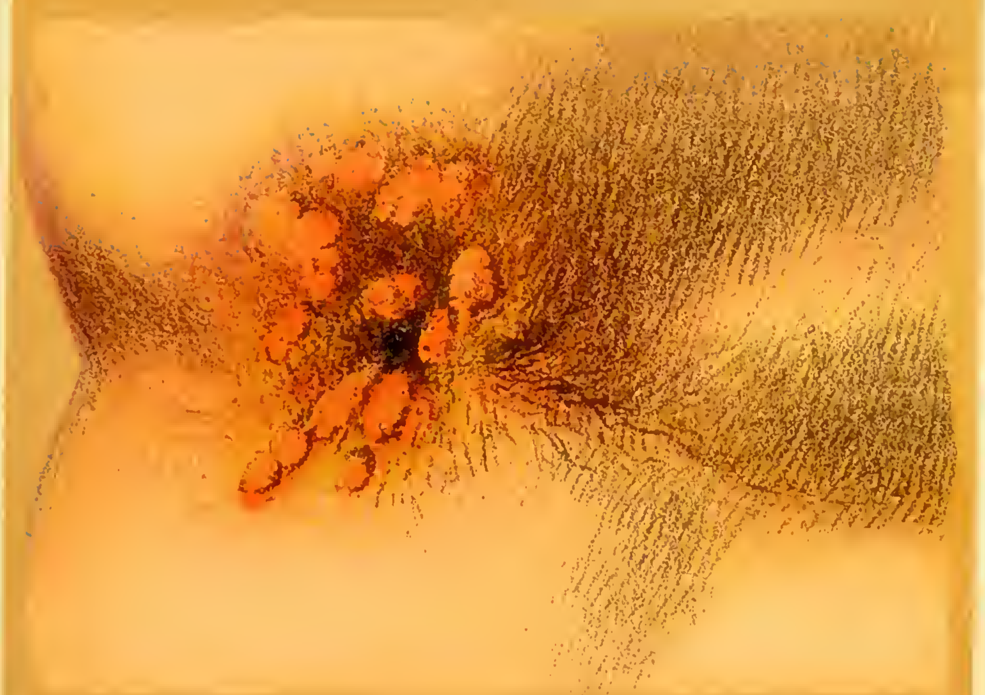
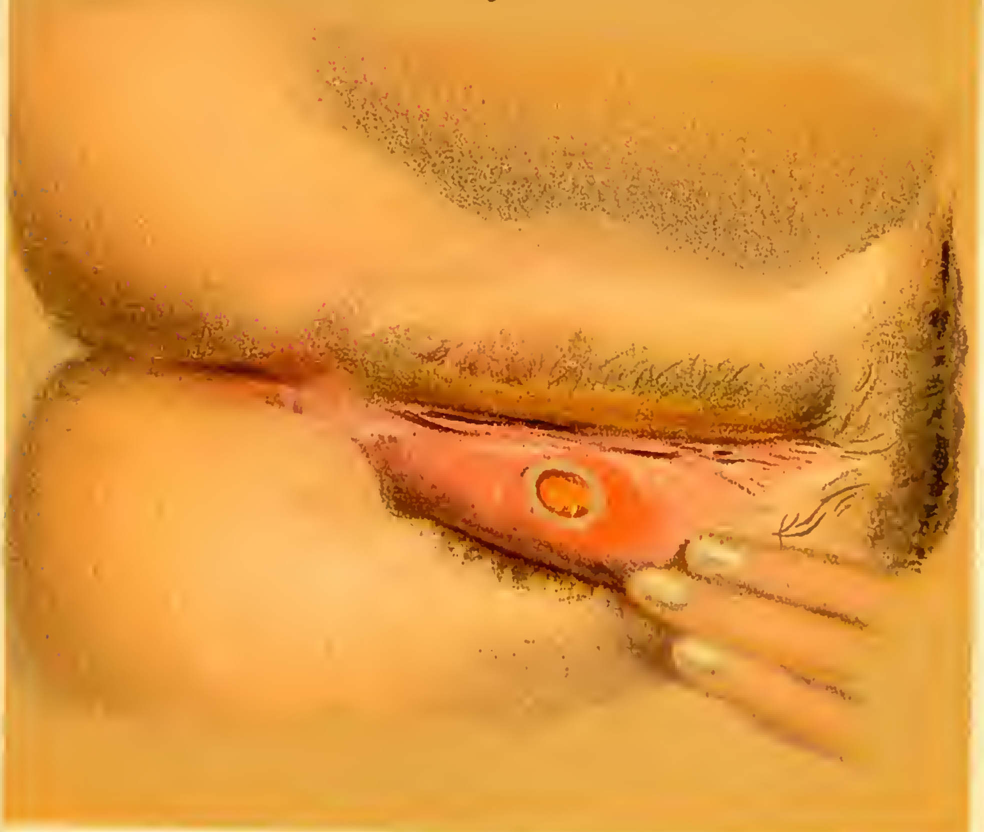


Fig 1.



Hanhart imp.

EXPLANATION OF PLATE XVIII.

Fig. 1. Minute anatomy of condyloma.

Fig. 2. Minute anatomy of gumma of testicle; in the centre is a small artery cut across showing endarteritis.

Fig. 1.

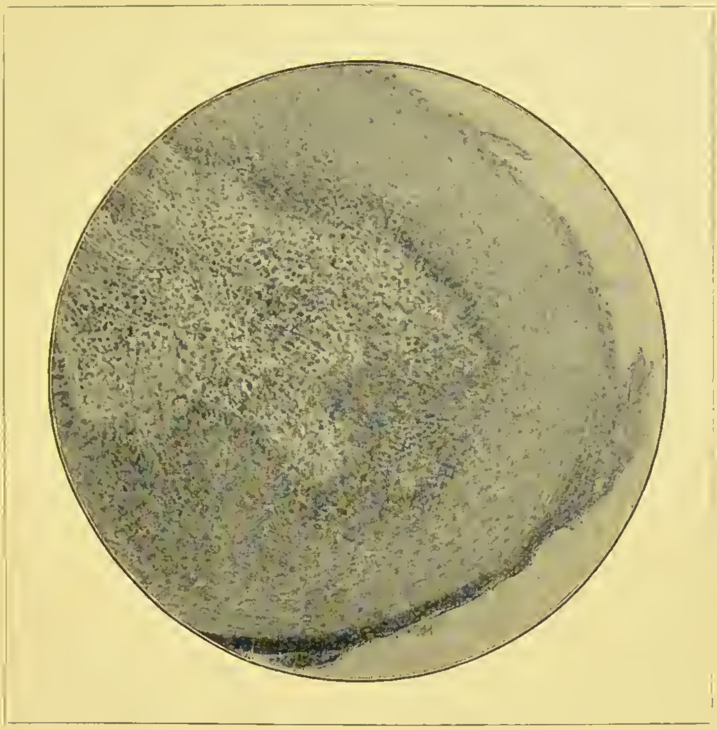
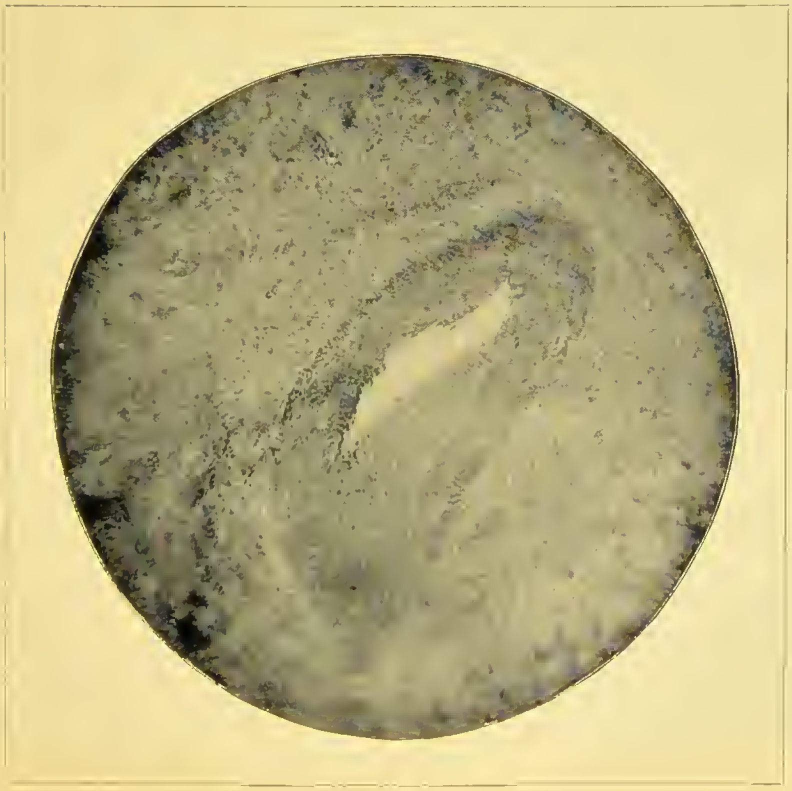


Fig. 2.



known as "rhagades;" and the mucous membrane of the lower part of the rectum may thus become involved. In the healing of these ulcers, some amount of contraction is likely to take place, but the constriction from this cause would be situated close to the anus and only slight in character. There would likewise be cicatrices or other marks of ulceration around the anus. It is, however, supposed by some authors that ulceration and stricture of the rectum are generally due to the development of condylomata within the bowel, and their subsequent stages of ulceration and cicatrisation, but this is very doubtful, although mucous patches in the rectum do occasionally occur, and women seem more liable to this affection than men. Occasionally, when the condylomata are extensive and ulcerated upon the surface from pressure, and accompanied by thickening of the surrounding tissues, the disease has been mistaken for epithelioma.

Gummatous deposits and infiltration of the submucous tissue are the most common causes of syphilitic ulceration and stricture of the rectum. Fournier,* however, dissents from this view, and thinks that in the majority of cases of stricture of the rectum in syphilitic subjects, the condition is due to an infiltration of the ano-rectal walls with a new formation of unknown structure, a hyperplastic proctitis which generally goes by the name of ano-rectal syphiloma, and which has certain resemblances to the fibroid degeneration seen in the nose and larynx. It undergoes fibroid changes and produces contraction of the calibre of the bowel. He states that, as a general rule, neither ulceration nor cicatrices can be found in the rectum in cases of syphilitic stricture, and hence he infers that the morbid changes involve the submucous tissues rather than the mucous coat. Zeissl,* on the other hand, states that the lesion is due to gummatous infiltration of the submucous tissue. The disintegration of the deposit causes ulceration of the free borders of the longitudinal folds, and of the mucous membrane between adjacent folds. When cicatrisation takes place, some of these folds are either obliterated or become adherent to each other: in either case, the calibre of the bowel is reduced. Zeissl further states that distinct gummata are sometimes developed in the submucous tissue, and are followed by disintegration, ulceration, and severe stricture. He reports a case of this nature, occurring in a man presenting also syphilitic nodes and sarcocele.

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* "Lésions tertiares de l'anus et du rectum," and E. Godebert, "Essai sur les rétréc. syph. du rectum," Paris, 1873.

It is probable that gummatous deposits in the rectum do not, as a rule, give rise to any particular symptom until disintegration and ulceration take place, but obstruction of the bowels has been caused by a large gumma blocking up the rectum. When these changes are in progress, the patient will complain of a sensation of fulness in the bowel with frequent desire to go to stool, the motions being small and scanty, and often consisting merely of sero-purulent or gelatinous matter. As the ulceration continues there will be more and more pain in the bowel, increased after defæcation, spasm of the sphincter, and alternating attacks of diarrhœa and constipation. Pain in the legs and back, loss of appetite, and in some cases vomiting will now be complained of. When cicatrisation is in progress and contraction is taking place, symptoms due to the mechanical obstruction will be superadded to those just mentioned. These are more or less obstinate constipation, with occasional attacks of diarrhœa, distension of the abdomen, loss of appetite, etc. Abscesses sometimes form above the strictured portion, and make their way by the side of the bowel to the surface, thus causing fistulæ.

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* "Lehrbuch der Syphilis," p. 511.

On examination, when the disease is in the early stage, the ulceration is generally found to be within two inches of the anus. The ulcer varies in size, its surface is red and covered with more or less purulent matter; sometimes the whole circumference of the bowel is thus affected. The ulceration may involve the muscular coat and destroy a considerable portion of the internal sphincter. When contraction has taken place, the calibre of the bowel will be found more or less reduced; in very severe cases even a small sound is passed with difficulty. Above the stricture the rectum is much dilated.

In ano-rectal syphiloma, there is fibrous contraction without ulceration, the affected portion of the rectum being converted into a stiff narrow tube, giving rise to symptoms of stricture, but later on superficial ulceration of the mucous membrane takes place above the stricture, and causes irritative diarrhœa with pus and blood in the stools.

Syphilitic stricture of the rectum is found much more frequently in women than in men, and generally occurs from five to ten years after contracting the disease, so that, as a rule, the patients are from thirty to forty-five years of age.

The *diagnosis* of stricture of the rectum is for the most part easily made when obstruction has set in, but the exact cause of the affection is frequently difficult to determine, the symptoms being often very obscure until the later stages have been reached. Syphilitic stricture is chronic in its course, and therein differs from what is usually observed in cancerous stricture of the rectum, but the reverse may occur. Syphilitic stricture generally begins within three inches of the anus, and on digital examination feels like a leather tube; is smooth and not nodular, except when due to gummata. In cancer, also, hard nodular masses can be felt in the walls of the bowel, and the pain is in most cases very severe. When ulceration has taken place it may be impossible to diagnose it from malignant disease without a microscopical examination, which should always be made in a doubtful case. Stricture of the rectum may be due to contraction following tubercular ulceration, but such cases are very rare, fistula being the general outcome of this form of ulceration of the rectum. In making a diagnosis of the cause of stricture of the rectum, the history of the case and any co-existing symptoms will materially aid us in coming to a correct conclusion.

Treatment.—In the early stages, syphilitic ulceration of the rectum is curable, but if the calibre of the bowel is much reduced, relief of the urgent symptoms is all that can be attained. Constitutional treatment by mercury or iodide of potassium should always be tried; calomel ointment should be applied to the ulcer, and the bowels must be kept open by some mild aperient. A non-stimulating diet and rest in the recumbent position are necessary adjuncts to the treatment. If there be much irritation morphia should be added to the calomel ointment. When stricture exists, attempts should be made to dilate it by means of a rectum bougie, used every other day for some weeks. If no good result be obtained, and the infiltration be very dense and resistant, the thickened portion should be divided in several places with a bistoury or a hernia-knife, care being taken not to cut too deeply. The use of the bougie is then to be resumed. Failing to procure relief, the question of further operative measures will have to be considered, and the choice will lie between an inguinal colotomy and excision of the stricture. The latter operation offers, in suitable cases, the best means of cure, and has undoubtedly a large future before it, as, owing to improved methods, the rate of mortality is rapidly sinking.

SYPHILITIC AFFECTIONS OF THE LIVER AND PANCREAS.

Hepatic affections connected with syphilis have been observed from a very early period, but it is only during the last thirty years that the lesions have been carefully studied and classified. Of all the internal organs the liver is the one in which changes due to syphilis are most frequently seen, and these occur during the secondary and tertiary periods, but principally during the latter stage. Jaundice sometimes accompanies the development of the syphilitic exanthemata; and in the cases in which it is a prominent symptom it has been observed that evidences of decided constitutional disturbance, viz., general depression, headache, vomiting, and fever were likewise present. The symptom is neither very marked nor of long duration, the skin regains its normal colour in three or four weeks. As a matter of course, while it lasts, the yellow tinge modifies the appearance of any existing roseola. Various theories have been propounded as to the cause of this symptom. Congestion of the liver, compression of the biliary ducts by swollen glands, the propagation of inflammation from the intestinal mucous membrane to the biliary ducts, have all been considered to play a part in its causation, but it would seem that congestion is the most probable cause. The patients complain of pain or uneasiness in the hepatic region, and the liver may project one or two fingers' breadth beyond the margin of the ribs.

The majority of the cases have occurred in women. Acute yellow atrophy of the liver, or malignant jaundice, is occasionally seen in connection with syphilis; indeed, among the known exciting causes of that rare disease, syphilis takes the first place. It occurs early in the secondary period, and is probably due to the presence of the syphilitic virus in the blood. Females are more liable to be attacked than males, and the disease is always fatal.

Other important affections of the liver are not infrequent in the later stages of syphilis. There are several distinct morbid processes, which may be variously combined with each other. These are:—1. Chronic interstitial hepatitis or cirrhosis. 2. Fibroid and gummatous infiltration. 3. The development of gummata. 4. Amyloid degeneration, which, however, is not characteristic of syphilis, though often found associated with severe tertiary lesions.

Chronic Interstitial Hepatitis or Cirrhosis rarely involves the whole liver, but is generally confined to a few parts. Cornil states that the disease consists in the local formation of fibrous tissue; Glisson's capsule becomes thickened, and fibrous adhesions are formed between the liver and neighbouring parts. The new connective tissue does not, however, as in alcoholic cirrhosis, envelop each lobule; it divides the liver into roundish or irregular portions or lobes, so that the organ somewhat resembles the kidneys of young animals. These lobes are separated by depressions or more or less deep furrows. The liver thus becomes much reduced in size, and so much altered in shape that it may be difficult to distinguish its various parts. The left lobe is drawn towards the right. When cut into, constricting bands of fibrous tissue, which creak under the knife, are found to be the cause of the lobulated condition of the organ. Many of the hepatic cells are more or less atrophied and granular, while others are normal. The surface may also present numerous depressions and cicatrices, due to the absorption of gummata, and adherent shreds of fibrous tissue, the remains of perihepatitis. The nodules and projections can sometimes be felt during life, especially if, as often happens, the liver assumes a spherical shape and projects below the margin of the ribs.

The symptoms of syphilitic cirrhosis resemble those of ordinary cirrhosis. Other symptoms of constitutional syphilis will co-exist, and in advanced cases there will be ascites, wasting, and probably chronic peritonitis, and the passage of dark urine containing large quantities of abnormal colouring matter. The disease pursues a chronic course, and thus differs from cancerous affections of the organ. In cirrhosis due to alcohol the nodules are smaller and more uniform in size, and much more numerous; the cut surface is more homogeneous, and the fibrous septa are less thick. The superficial furrows are not so deep, and the alterations in form are less marked.

Gummatous formations are easily distinguished from other growths in the liver. They are found in two forms: (1) that of a general or diffuse infiltration, a condition seen in children the subjects of hereditary syphilis; (2) as isolated growths. The former will be described in the chapter on infantile syphilis.

Gummatous nodules are of somewhat frequent occurrence in the liver in severe cases of constitutional syphilis. They are often found associated with the fibroid induration, and more rarely scattered throughout an otherwise healthy parenchyma. They are rounded in shape, and vary very much in size; some are minute, no larger than a pin's head or millet seed, whilst the largest attain the size of an egg, and there are many intermediate sizes. They may be either deep seated or superficial, and projecting as roundish elevations beneath the capsule. They are also often found beneath the depressed cicatrices on the surface. When incisions are made through the liver, the gummata are seen to be of a yellow or yellowish-white colour; the central part is homogeneous, soft, and caseous, while the periphery is made up of dense fibrous tissue which sends out prolongations in various directions. According to the stage of development, the surface is either dry or covered with a milky fluid. Absorption may take place, and result in a fibrous cicatrix, the yellow caseous portion having entirely disappeared. The thick fibrous zone has a marked tendency to contract; it would appear to be a special formation, and not merely a condensed portion of the proper structure of the liver. The yellow substance is composed of embryonic tissue, containing in its interstices multitudes of small cells and round nuclei, those situated in the centre being often more or less atrophied. The growths are but sparingly supplied with blood-vessels, some of which are partially obliterated.

Gummatous growths in the liver, and the changes to which they give rise, were for a long time confounded with tubercles and cancer. Tuberculosis of the liver is never primary; there is always a pre-existing tuberculosis in other organs. It shows itself in the form either of translucent miliary granulations or of yellowish masses, as large as a pea or bean. It does not give rise to deformities of the organ, or to those deep furrows which are characteristic of syphilis. With regard to cancer, the nodules are reddish on section, and they are not, as in syphilis, surrounded by a firm zone of fibrous tissue. They are often flattened or even excavated at the surface of the liver, and they are abundantly supplied with blood-vessels.

The *symptoms* of gummata of the liver vary according to the extent to which the organ is implicated and the duration of the case. If the liver be much enlarged and the nodules be near the anterior surface, they may be detected on palpation. Jaundice is sometimes observed. As the case proceeds, pain or discomfort in the region of the liver, dryness of the skin, derangement of the digestive functions, albuminuria, emaciation, vomiting, and diarrhœa generally supervene. Ascites, however, is often not present, but there is sometimes hæmatemesis towards the close. The affection is usually of long duration. Other signs of syphilis, such as gummata of the skin, cicatrices in the throat, and bony lesions, almost invariably co-exist.

The *prognosis* of syphilitic cirrhosis of the liver and of gummatous growths is for the most part unfavourable, especially if the liver be much contracted. If ascites and diarrhœa are present, they are serious symptoms. If the liver be enlarged, some benefit may be expected from treatment, provided that the general condition of the patient is not very unfavourable.

Treatment.—Iodide of potassium is the remedy upon which the most reliance is to be placed, and it must be given in large doses and for long periods. It is well to begin with doses of gr. v. three times a day with gr. ij. Ammon. Carb., and gradually to increase the iodide by adding a grain or two to each dose, until 60 or even 100 grains are taken every day. This quantity may be continued for some weeks unless iodism be produced. The iodide may be given dissolved in Decoct. Sarsæ Comp., the quantity of the latter being increased in proportion. If the stomach rejects these large doses of the iodide, it will sometimes retain the drug if given in some effervescing fluid, as seltzer water, etc.

Amyloid degeneration of the liver sometimes occurs in patients suffering from severe syphilitic affections, such as caries or necrosis with long-continued suppuration. Like acute yellow atrophy, however, the lardaceous change is not characteristic of syphilis; it is met with in other chronic diseases—*e.g.*, pulmonary consumption, and in various disorders of nutrition. The most prominent symptoms are: great enlargement of the organ, a feeling of pressure and tension, ascites, clay-coloured fæces and anæmia. Enlargement of the spleen and albuminuria generally co-exist. The condition is one in which little benefit can be expected from medicines, but iodide of potassium or iodide of iron may be tried.

With regard to the *pancreas*, very few observations have been made of any changes presumably due to acquired syphilis, but the subject will be again referred to in connection with inherited disease. Lancereaux mentions a case in which gummatous growths in the pancreas co-existed with similar tumours elsewhere. He also states that in several cases of visceral syphilis he has found the pancreas in a condition of induration.

Syphilitic Affections of the Spleen.

But few examples of syphilitic changes of the spleen have been placed on record. In the eruptive stage of syphilis, some amount of swelling ordinarily takes place; at a later stage, formation of fibrous tissue, leading to thickening, induration, and subsequent contraction, has been observed. Hypertrophy of the spleen is also met with, and in cases presenting no appearances of amyloid disease. In eight cases of this kind, the average weight of the spleen was nineteen ounces. Gummata are rare. They present the same appearances as those found in the liver—that is, they consist of yellowish nodules, varying in size from that of a pea to that of a walnut, roundish in shape, and circumscribed by an indurated fibrous zone. Amyloid degeneration has been found in severe cases of constitutional syphilis.

SYPHILITIC AFFECTIONS OF THE KIDNEYS.

It is probable that the kidneys are more frequently affected in syphilis than is commonly supposed, and it is now generally admitted that the syphilitic poison can produce an acute nephritis in a similar way to that in which the virus of scarlatina can produce it. Other well-known causes of kidney affections frequently co-exist in cases of syphilis, so that it is difficult to estimate the part played by each. Syphilitic nephritis most often develops during the second and third months after the appearance of the primary sore, and the onset is generally sudden. It presents all the characters of ordinary acute nephritis, except that fever is usually absent. This form of albuminuria is easily curable by anti-syphilitic treatment, and generally leaves no trace behind. It has to be distinguished from the albuminuria which sometimes occurs in the later periods, and of which the prognosis is much graver, as the morbid process may be the starting-point of chronic interstitial nephritis. Owing to the depression which syphilis causes, a person infected with the disease is more susceptible to cold, and may be predisposed to contract a nephritis from chill. It is well known that amyloid changes are often found in the kidneys of syphilitic subjects.

The renal lesions of the later secondary and tertiary periods include chronic interstitial nephritis, amyloid degeneration, and gummatous formations. They give rise to symptoms such as are generally met with in chronic renal disease. Chronic interstitial nephritis is often associated with amyloid degeneration, and in the opinion of many pathologists the amyloid degeneration precedes the interstitial nephritis.

When the organ is attacked with amyloid degeneration, the large white kidney results; the urine is either normal in quantity or scanty, and contains albumen, hyaline and waxy casts. When chronic interstitial nephritis prevails, the contracted kidney results; the urine is increased in quantity, and exhibits a low specific gravity, small amount of albumen, and occasional hyaline casts. The two conditions, as before stated, may be combined, and the symptoms will then vary according to which disease is the more pronounced.

Gummatous formations are found, though rarely, in the kidneys, and appear either as distinct nodules, or as fibroid cicatrices and caseous patches, either in the pyramids or in the cortex, rarely in both, and the disease is generally found only in one kidney. In the majority of the cases the gummata are found in the cortical portion of the kidney and near the surface; they take the form of rounded yellowish masses, varying in size, but rarely exceeding half-an-inch in diameter. Fibrous patches or cicatrices on the surface of the kidney generally co-exist, and are in all probability the remains of gummatous growths. The liver is always simultaneously implicated.

The *symptoms* of interstitial nephritis, due to syphilis, resemble those of the same affection due to ordinary causes. Albuminuria, œdema or anasarca are generally observed. The syphilitic origin of the disease can be inferred only when decided evidences of syphilis are present. These latter, however, may be very obscure. If enlargement and deformity of the liver co-exist with the albuminuria, the nature of the case will be rendered evident. Amyloid degeneration of the kidney, due to syphilis, presents no peculiar features. As the case advances there is, however, a more marked degree of atrophy than is associated with the same condition due to other causes.

In gumma of the kidneys, the symptoms are usually so slight that its existence is only manifest at the autopsy; and on this account, gummata of the kidney may be commoner than is generally thought. Large gummata, however, may break down, and point externally, simulating perinephritic abscess.

The *prognosis* in cases of late syphilitic disease of the kidney is unfavourable, but in the earlier stages some relief to the symptoms may be expected from full doses of iodide of potassium.

Hæmoglobinuria occasionally appears during the course of an attack of syphilis, but whether dependent upon the syphilis or not has not been definitely proved. The presumption, however, seems that it does so depend; for in all the cases as yet recorded, no drugs had any effect except mercury, which caused the symptoms quickly to disappear.

The following cases illustrate this condition:—"The patient,* ætat. 30, was a bricklayer: he contracted syphilis in 1875. In 1881 he had a large ulcerating node, and in 1884 a large sternal node. For the latter he came under treatment at the Sheffield Hospital, and at the same time stated that he had shivering attacks and passed bloody urine. The attacks presented the usual characteristics of the disease; they were excited by cold and exposure; the symptoms were rigors, rise in temperature to 104° F., followed by sweating. The urine passed after the rigor was of a dark port-wine, or pitch-black colour, contained much albumen, methæmoglobin, granular débris, granular nucleated cells, casts, and oxalates in abundance. The albumen and hæmoglobin were twice noted to appear and disappear at the same time. There was no icterus during or after the attacks. The patient had suffered from the disease for about a year. There was no urticaria or gastro-hepatic disturbance. Iodide of potassium (which quickly cured his node), quinine and iron, did not prevent the attacks. But after mercury was given the patient had only one modified attack, and the symptoms ceased altogether after the drug had been taken eight days. There was no relapse four months after."

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* "Brit. Med. Jour.," July 18, 1885.

Koster * relates a case of paroxysmal hæmoglobinuria in a patient who had contracted syphilis four years previously, and for which he had undergone treatment on three occasions.

As the result of most careful investigation, the details of which are given, it was demonstrated that merely walking, whether in a cold or warm atmosphere, was sufficient to produce an attack, and the condition could not be made to appear by any other means. All treatment failed until subcutaneous injections of mercury were given every five to ten days, the perchloride being used on seven different occasions, whereupon the patient was discharged cured. The only subjective symptoms were slight abdominal pains during the attacks, and albumen could never be detected in the urine except at those times, and was always accompanied by hæmoglobin.

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* "Therap. Monatshefte," Feb. 1893.

CHAPTER XV.

SYPHILITIC AFFECTIONS OF THE ORGANS OF THE THORAX, AND OF THE ARTERIES AND VEINS.

The Lungs.—Pulmonary lesions occurring in syphilitic subjects are not necessarily connected with syphilis, but there are undoubtedly some affections of the lungs which are directly due to the syphilitic virus. Opinions are, however, divided as to the frequency of such a causation; some authorities deny that syphilis ever produces lung-disease, whilst others declare that it is a very frequent cause. For my part, I am of the opinion that syphilitic lesions of the lungs are not rare. There is very little said in the text-books on the subject, an omission which is probably due to the difficulty of recognising syphilitic pulmonary affections at the bedside. They appear in the earlier as well as in the later stages of the disease.

In the earlier stages, irritation of the bronchial mucous membrane accompanies or precedes the eruption in some cases, and a sudden and somewhat severe attack of bronchitis is occasionally observed. When the eruption appears, the chest-symptoms either subside altogether or become much lessened. This so-called syphilitic bronchitis appears to be analogous to the same symptom which so often accompanies the eruptive stage of the exanthemata.

In other cases, the sudden disappearance of a syphilitic eruption has been followed by symptoms of bronchitis and fever. The bronchitis is sometimes persistent, and is attended with copious muco-purulent expectoration, loss of flesh and strength, night-sweats and hectic, and the symptoms may closely resemble those of phthisis. Examination, however, will fail to detect any signs of cavities or of consolidation. Dr. Stokes has pointed out that the principal ground for the diagnosis between syphilitic irritation of the bronchi and tubercle is the want of accordance between the physical signs and the constitutional symptoms. Dr. Walshe mentions one source of difficulty which may arise in these cases; the infra-clavicular ribs and clavicle may become thickened from periostitis and produce dulness on percussion, which cannot positively "be distinguished from that of tubercle within the lung. Here the observer must wait for events to clear up the diagnosis."

The syphilitic lung-affections which occur in the later stages of the disease take the form of fibroid induration, gummatous formations, diffuse infiltration, and ulcerative lesions, the first three being the most characteristic. Any one of these conditions may occur in the lungs alone, or may be the result of extension from the bronchi or the pleura.

When the disease extends from the bronchi, it generally takes the form of callous induration of the pulmonary tissue, some of the bronchial tubes being at the same time narrowed from cicatricial contraction. The larynx and trachea are usually similarly implicated, but this is not necessarily the case. This fibroid induration does not involve the apex, but attacks the root of the lung and radiates thence along the blood-vessels and bronchi; it exhibits no tendency towards softening or caseous changes, and it is generally associated with peculiar puckerings of the pleura, due to the contracting bands of connective tissue. It is not spread over a whole lobe, but affects small nodules. The air-cells are not primarily affected, the disease consisting of an induration implicating the connective tissue surrounding the branches of the pulmonary and bronchial arteries.

Gummatous growths, in various stages of development, are found in the lungs, and are very difficult to diagnose differentially from tubercular disease. They differ, however, from tubercles in not occupying the apices; their most frequent seat being the middle and lower portions of the lungs, and they are not prone to break down. They are generally few in number, and white or yellowish in colour; they vary in size from that of a pea to that of a walnut. It sometimes happens that a gummatous infiltration of the wall of the thorax invades the pleura, and extends to the lung. Fournier has pointed out that whereas tubercles of the lung tend to become confluent, the gummata generally remain isolated, and when softening takes place they do not break down altogether, owing to the firm fibrous zone by which they are surrounded. In connection with gumma, there is often a diffuse infiltration of the lung, in the form either of fibrinous exudation in the alveoli, or of a diffuse formation of connective tissue, or of both combined.

Ulcerative lesions may occur from breaking down of gummata, though they are somewhat rare; the case quoted by Von Cube is a good illustration of this condition. The patient, nine years after contracting syphilis, developed symptoms of phthisis, which rapidly advanced to the ulcerative stage; he was sent to the Riviera; a microscopic examination of the expectoration, which contained pieces of tissue, showed broken-down lung substance and development around of fibrous tissue. He completely recovered under a course of mercury. Cases of a similar nature are also reported by Scheck & Guntz, Gaudichier, and others.

The *symptoms* of gummata of the lungs resemble those of pulmonary phthisis, but their course is less rapid, and in some cases it has been observed that notwithstanding the severity of the local symptoms the strength of the patient was less affected than in ordinary cases of consumption. The fact that the upper lobes of the lungs are generally unaffected in such cases is one of considerable importance as regards diagnosis. Dyspnœa is always a prominent symptom; cough is not very troublesome; there is generally no fever. The effect of treatment will likewise aid in indicating the true nature of the case. Some authorities have alluded to the frequency with which laryngeal ulceration co-exists with pulmonary syphilis. It must not be forgotten that patients suffering from the laryngeal affection in a severe form often exhibit many of the symptoms of phthisis; but a careful examination will prove that their lungs are free from disease. The diagnosis will, of course, be materially aided by the history of the case, and the almost invariable co-existence of other symptoms of syphilis. As a rule, it will be only necessary to diagnose between syphilis and tuberculosis, and a microscopic examination of the sputum will materially aid, as the absence of the tubercle bacillus, together with the absence, in the majority of cases, of signs of cavities, and the position of the lesions at the base or middle of the lung, will point to syphilis.

In any given case of pulmonary disease of which syphilis is supposed to be the cause, iodide of potassium is the remedy which is mainly indicated, but a course of mercury should be given afterwards. For cases of syphilitic bronchitis, mercury is to be preferred. Quinine, cod-liver oil, and other tonics may also be required if hectic, emaciation, or other evidences of debility are present.

The Heart.—Syphilitic affections of the heart occur in the forms of diffuse interstitial induration of the muscular substance and of gummatous formations. The two conditions may co-exist. In a very marked case recorded by Professor Teissier, the patient, a woman, aged twenty-seven, had suffered from syphilis for about three years, but was apparently in good health until the day before her death, when she had an attack of colic and dyspnœa. She died in a state of asphyxia at the Hôtel Dieu. On post-mortem examination signs of endocarditis were found in both ventricles, but especially in the left, the muscular structure of which, however, was almost normal. The wall of the right ventricle and the inter-ventricular septum were much changed. The former presented scarcely any trace of muscular tissue, having been converted into a grey fibrous layer of a firm consistence, creaking under the scalpel, and exhibiting on section small whitish masses as large as lentils, which contrasted with the grey semi-transparent tissue in which they were embedded. The septum contained similar white masses. The only other lesions referable to syphilis—viz., small gummata and changes in the coats of the vessels—were found in the kidneys. Virchow believes that the two processes, the diffuse interstitial myocarditis and the gummatous formations, are both the results of syphilis, and that they may occur independently of each other. Other pathologists regard the interstitial inflammation as due to the presence of the gummatous nodules. The former opinion would appear to be correct, inasmuch as in a few cases interstitial myocarditis was not accompanied by any gummatous formations. Dr. W. Pasteur recorded in the "Pathological Transactions" for 1887 a case of diffuse syphiloma of the heart affecting both ventricles. Drs. Burney Yeo, Henderson, Coupland, Cayley, and others have also recorded cases.

Vegetations of the valves of the heart have been occasionally described as due to syphilis, but it is very questionable, in the present state of our knowledge, whether this view is correct.

There is another form of syphilitic disease of the heart, characterised by the formation of fibrous tissue, which takes the place of the muscle substance, and has a predilection for the papillary muscles. It is due to narrowing and blocking up of the coronary arteries, the result of syphilitic arterio-sclerosis.

Heart Aneurism.—This is a condition which may result from syphilis affecting the muscular substance of the heart.

Dr. Green recorded in the "Pathological Transactions" a case of ruptured aneurism. The patient was a barrister, aged thirty, who had drunk hard, but there was a clear history and evidence of syphilis. The patient died suddenly. The pericardium was distended with black clot, and a soft fawn-coloured bulging of auricular shape, the sac of an aneurism of the wall of the right ventricle. A yellowish-white gummatous-looking swelling was seen around the aneurism. The clear dependence of the ruptured aneurism on syphilis was the great interest of the case. Many other similar cases have been noted.

Symptoms.—In the great majority of the cases noted, the disease was not recognised during life, and the condition was discovered only at the autopsy. The majority of such patients die suddenly, and it is noteworthy that nearly all the cases that have been recorded were chronic alcoholics.

Syphilitic Affections of the Arteries and Veins.—Affections of the arteries, as a result of syphilis, were alluded to by the older authors on this disease. They believed that the changes it produced were sometimes the cause of constriction and occlusion of the arteries, and also of aneurism, but they appear to have attributed the arterial lesions mainly to the extension of disease from neighbouring parts. Lancisi, for instance, describes cases in which bony tumours caused compression of arteries, and afterwards, by the suppuration to which they gave rise, produced a thickening and dilatation of the coats of the vessels. Morgagni attributed to syphilis certain changes in the aorta, and especially some aneurismal tumours of that vessel. The prevailing notions on this subject remained, however, very ill-defined until Virchow (1858) described cases of probable syphilitic deposit in the heart, and, alluding to the similarity existing between fatty metamorphosis of a gummatous growth and atheromatous changes in endarteritis, suggested that the latter might sometimes be of a syphilitic character. He mentions another case of a girl in whom numerous indurated and atheromatous patches were found in the aorta, with well-marked signs of syphilis in several organs. Dr. Wilks, in 1863, recorded a case of cerebral disease due to syphilitic arterial lesion, and since that time many cases of syphilitic disease of the arteries of internal organs have been placed on record.

Various pathological changes in the arteries are now ascribed to syphilis, and it will be convenient to take them in order.

Arterio-sclerosis.—This occurs in two forms: (1) diffuse, and (2) circumscribed. Although, doubtless, syphilis is an important agent in this disease, yet it is difficult to define exactly the part it plays. Arterio-sclerosis must be regarded as the forerunner of aneurism.

Endarteritis occurs in the smaller arteries, and the arteries of the brain are the most frequent seat of these lesions, which have been carefully studied and described by Heubner (see Pl. XIX., Fig. 1). He states that the changes consist in a proliferation of cells and nuclei, starting from the endothelium of the intima, and taking place between this latter and the fenestrated membrane, the deposit being gradually converted into embryonic connective tissue. This proliferation usually begins on one side of the vessel only, where it forms a small tumour projecting into the canal, but in course of time it involves the whole circumference of the vessel. When the process is at its height, inflammation of the vasa vasorum causes the white blood-corpuscles to pass into the tissue of the adventitia and muscular coat, and thence into the fenestrated membrane, so that on transverse section the tissue of the artery exhibits a remarkable resemblance to granulation-tissue, as found in syphilitic growths in all vascular structures.

In subsequent stages the new formation undergoes either organisation or involution. In the former case new capillaries are developed in the swelling, the endothelium regains its normal activity and forms a new fenestrated membrane, so that the new formation lies between this latter and the original membrane. The process thus comes to a standstill, but the result is considerable diminution of the calibre of the artery, which, however, still permits a thin current of blood to pass through it. In the second case the cellular deposit in the intima is converted into fibrous connective tissue or cicatricial tissue.

EXPLANATION OF PLATE XIX.

Fig. 1. Syphilitic endarteritis of internal carotid artery.

Fig. 2. Teeth in hereditary syphilis. The upper central incisors show the characteristic notches.

Fig. 1.

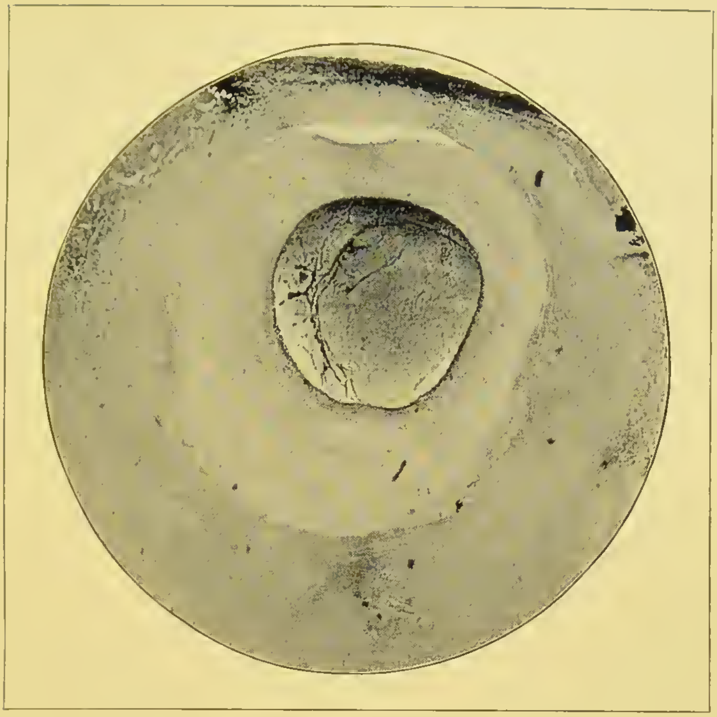
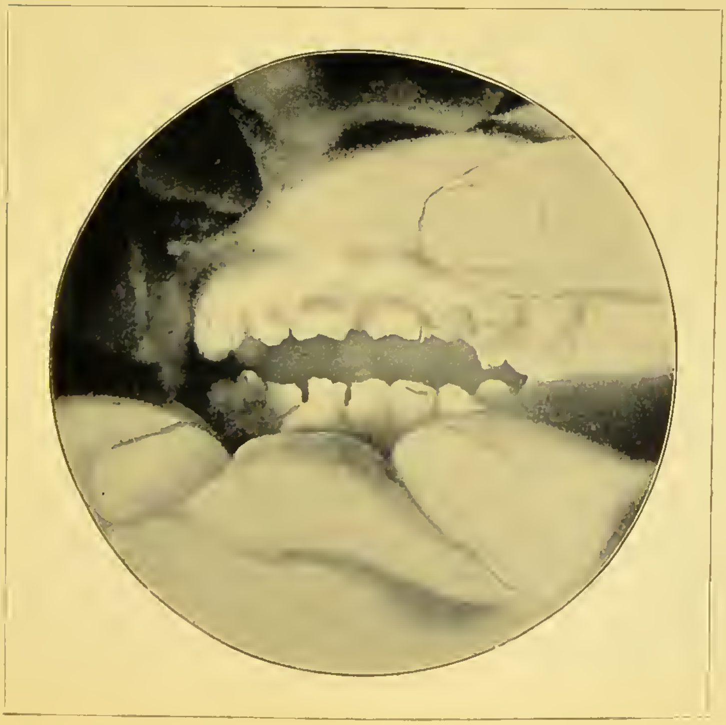


Fig. 2.



This process is, of course, attended by contraction, with the result of further diminution in the vessel's calibre, and may lead to complete occlusion after previous thrombosis. As a final result, the fenestrated membrane is converted into ordinary connective tissue, the cells of the muscular coat atrophy and disappear, and all that remains of the original vessel is a thin fragile strand, composed of connective tissue.

It is a remarkable circumstance that the entire arterial system is not uniformly affected by the process in question. The changes are observed to occur to a marked extent only in certain spots. The carotid arteries and their ramifications are the most prone to be affected. The consequences are more or less decided narrowing or complete occlusion of the canal of the affected vessel. This latter process may take place in a gradual manner, or suddenly, if aided by the formation of thrombi.

Such is Heubner's description of syphilitic endarteritis. The results of such lesions, occurring in the arteries of the brain, will be described in the chapter on "Syphilis of the Nervous System." Many cases have now been recorded which place the nature of the affection, and its dependence upon the syphilitic poison, beyond a doubt. They likewise prove that these arterial lesions not uncommonly occur at a much earlier period after infection than was formerly supposed. They have been noticed as early as the fifth or sixth month, and it is remarkable that they are especially frequent in cases in which secondary symptoms have been almost, if not altogether, wanting.

Gummatous peri-arteritis has been described by Baumgarten as occurring in the cerebral arteries. The gummata are situated in the adventitia, and may involve the muscular coat. There is a corresponding thickening of the inner coat.

Hyaline degeneration is frequently seen in the smaller arteries, the whole wall of the artery being thickened and converted into a translucent hyaline substance.

In connection with this subject it remains to consider the relation which syphilitic disease of the arteries bears to aneurism. Sir W. Aitken has stated that the tendency to aneurismal dilatations and cicatrix-like loss of substance in the lining membrane of the great vessels in *young* subjects, who are or have been severely affected with syphilis, is a point in morbid anatomy which requires yet to be investigated. The fact that aneurism is more common among young soldiers than among any other portion of the community has been clearly demonstrated. Inspector-General Dr. Lawson has calculated that aneurism is eleven times more frequent among soldiers than civilians. Dr. Parkes has pointed out that the two most common causes of heart-disease in the civil population are rheumatic fever in young subjects, and renal disease in older people. The latter cause does not operate in the army, and the former is insufficient to account for the facts. Many soldiers, suffering from aneurism, have never had any symptoms of rheumatism.

Military statistics show that syphilis is a potent factor in the production at least of arterio-sclerosis. In 114 post-mortem examinations of soldiers dying at Netley Hospital, atheroma of the aorta was found in 22 cases. "Of these, 17 had a syphilitic history, 1 was doubtful, and 4 had no syphilis, but had heart and lung diseases. Of the whole 114 cases, 78 had no syphilitic history, and had 4 cases of atheroma, or 5·1 per cent.; 28 had a marked syphilitic history, and 17 had atheroma, or no less than 60·7 per cent. This seems very strong evidence as to atheroma. With respect, however, to actual aneurism, no corresponding analysis of cases has been made, and therefore at present the effect of syphilis must be considered uncertain, but it is quite clear, even admitting its influence, that there is no reason to think that syphilis prevails more among soldiers than among the civil male population of the same class. It is therefore unlikely that an excess of syphilis, if it really occurs among soldiers, and if it actually predisposes to aneurism, as seems probable, could produce eleven times as many aneurisms as in civilians. Mr. Myers has given evidence that in both the army and navy, aneurism is sometimes not preceded by degeneration of the arterial coats, and in these cases mere improper exertion seemed to produce it."* It would, therefore, seem that the *prevalence* of aneurism among soldiers must be due to other causes besides syphilis, and it is probable that a very important share in the causation must be assigned to the great bodily exertion (often rapid and long continued, and performed under unfavourable circumstances) which is required from a soldier. Syphilis is often a cause of arterio-sclerosis, and arterio-sclerosis is the most common cause of aneurism, but in ordinary subjects, except under special circumstances, this arterio-sclerosis would not go on to aneurism, the development of which is promoted in soldiers by the special exertions incident to military duties. Dr. Parkes describes how, in the medical wards at Netley, in one hour in the summer, when the hospital is full, almost all the combinations of heart-affections are to be seen. "It has appeared to me," he says, "that if anything gives the tendency to heart affections, then the dress and the accoutrements come in as accessory causes, and prevent all chance of cure. In some cases there is no valvular disease, and not much hypertrophy of the heart, but a singular excitability, so that the heart beats frightfully quick on the least exertion." It can be easily imagined how, in such cases as these, aneurism may become developed if there be any co-existent condition tending to impair the strength and elasticity of the arterial coats, already exposed to a severe strain. In the majority of syphilitic subjects examined by Sir W. Aitken in the post-mortem room at Netley, the coats of the thoracic aorta were impaired by characteristic changes —changes which are uncommon at so early a period of life as thirty-two years of age, and which, he had every reason to believe, were due to syphilis—a *syphilitic endarteritis.* "The changes were obvious, viz., cicatricial-like loss of subtance of the inner coats, small local dilatations of the artery, and in several cases aneurismal expansions, one as large as an orange, and which proved fatal. Fifty per cent. at least of these aortic aneurisms occurred in soldiers with syphilitic infection, and with no other ascertainable conditions present."* The evidence, therefore, seems very strong in favour of the existence of a connection between syphilis and aneurism, but more facts are required for the solution of the question as to whether in civil life aneurism can be traced in an especial manner to syphilis. Considering the great frequency of cases of the latter disease and the comparative rarity of the former, it would appear that the co-operation of other causes is necessary for the production of aneurism.

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* Parkes's "Practical Hygiene," p. 570.

As regards the veins, we have no certain knowledge of any particular lesion attributable to syphilis, and Lancereaux is inclined to regard the thrombosis sometimes found in the veins in cases of syphilis, rather as the effect of the cachectic condition than of any specific action of the virus. In the few cases that have been recorded, the symptoms associated with the phlebitis and the thrombosis seemed to point to a dependence upon syphilis. It appeared as though there were gummatous formation and infiltration in the connective tissue surrounding the vein. The swelling subsided under the administration of iodide of potassium, but the thrombosis remained. Von Langenbeck records two remarkable cases in which gummatous growths appeared over the course of the internal jugular and femoral veins, and the tumours became more prominent than those of a like nature observed in connection with arteries. It was a very prominent fact that, in these cases, the corresponding arteries were perfectly healthy. The growths appeared to originate from the connective tissue surrounding the vein and from its outer coat; at the same time the internal coat of the vein was the seat of morbid changes; it had lost its vitality and become brittle, while the canal of the vessel was almost completely filled up by a greyish-white, firmly adherent, decolorised thrombus.*

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* Aitken, "Science and Practice of Medicine," vol. ii. p. 655.

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* Langenbeck, "Archiv. für Klin. Chir.," 1881, Bd. xxvi., S. 279–80.

CHAPTER XVI.

SYPHILITIC DISEASES OF THE PERIOSTEUM, BONES, JOINTS, CARTILAGES, MUSCLES, ETC.

During the course of syphilis, affections of the periosteum and bones occur next in frequency to those of the skin and mucous membranes, and their development is generally later than that of the superficial manifestations. The periosteum, or the bone, or both these parts at the same time, may be the seat of syphilitic inflammation.

Pains in the bones often occur at a very early period, viz., during the eruption-fever, and are generally known as osteoscopic pains. These pains, which are sometimes of a very severe character, are at first ill-defined, but are soon referred to certain parts and especially to the scalp and the shin-bones. There is no swelling, but the affected parts are very sensitive to pressure, and the pains are probably due to inflammatory œdema of the periosteum, of a slight and transitory character. They may be altogether absent during the day, and their occurrence at night or during the evening is probably due to the exacerbation of the fever. It has been observed that patients in whom there are no febrile symptoms suffer but little, if at all, from these pains in the bones; whereas if the fever is high, the pains are usually severe. They generally disappear with the subsidence of the febrile symptoms.

The later manifestations of the effects of syphilis upon these parts take the forms of periostitis and osteitis, and there are several varieties of these affections, which may occur independently or as a result of syphilitic lesions in neighbouring parts.

Syphilitic Periostitis is the earliest of the lesions connected with the bones, and it may appear as early as the third month, associated with a roseolar or papular eruption. The bones whose periosteal covering is most frequently affected are the cranial bones, the clavicles, the sternum, and the tibiæ. The first symptoms are pain and swelling in the affected part. The pain is more marked at night than during the day, and is often of a very excruciating character. The swelling is due to the effusion, under the periosteum, of a gelatinous fluid containing numerous round cells. Similar cells infiltrate the deeper layers of the periosteum, and the neighbouring connective tissue is more or less œdematous. The superficial layer of bone is slightly involved; the mouths of the Haversian canals are enlarged and filled with reddish-grey gelatinous material. The course which the symptoms now take varies in different cases. The effusion may become absorbed, and the parts may return to their original condition; or suppuration may take place and be followed by necrosis of the subjacent bone. The active symptoms may slowly subside, and a chronic condition become established. Molecular disintegration of the deposit may then take place, or the deposit may become ossified.

Next to resolution, ossification is the most common result of syphilitic periostitis. The ossification may be of a diffuse character—that is to say, it may extend for several inches over the surface, but more frequently it occurs in circumscribed areas, and results in the formation of small, roundish, flattened, or convex tumours. These are at first firm, but elastic to the touch, and the skin covering them is unaltered in appearance and freely movable. Ossification sometimes goes on very slowly, and appears to begin in the round cells of the effusion nearest to the surface of the bone. In other cases the process is more rapid, the periosteal swelling soon loses its elasticity, and is converted into a hard bony mass, a node, osteophyte or exostosis. The growths are at first but slightly adherent to the subjacent bone, but as time goes on, and the bone participates in the inflammation, they become closely connected with it. These osteophytes are the result of the inflammatory irritation of the periosteum and surface of the bone.

Gummata.—The periosteum is often the seat of gummatous formations. These are more or less circumscribed, soft and elastic swellings, of a whitish or yellowish colour, from half-an-inch to an inch in diameter, and varying in consistence, some being almost fluid and others of a more solid character. In the early stages it is difficult to distinguish these from swellings due to inflammatory exudation, as occur in syphilitic periostitis above described; while, on the other hand, the occurrence of ossification does not exclude the possibility that the growth in which the process began was of a gummatous nature. As a general rule, however, gummata of the periosteum, as elsewhere, undergo a process of disintegration or absorption, the central part being the first to disappear, so that a small pit or depression is formed in this portion of the swelling. The pressure exercised by the tumour leads to inflammatory atrophy of the subjacent bone, and a more or less deep excavation is formed. Such depressions are often seen on the bones of the skull. They are sometimes surrounded by bony growths or osteophytes, and the deeper the depression, the more prominent is the surrounding bony circle. Gummata, either isolated or in groups, are sometimes found between the dura mater and the bones of the skull, and they produce the same effects upon the bone as in other situations. Sometimes a gummatous formation on the exterior of the skull corresponds with a similar growth beneath the bone, and perforation occasionally takes place.

The subperiosteal gummata, unless relieved by treatment, are liable to soften and break down; when this takes place, eroded patches of bare bone are seen, constituting what is known as syphilitic caries.

SYPHILITIC AFFECTIONS OF THE BONES.

The bones may be affected as a result of the periosteal lesions just described, or the lesions may begin in the bones themselves. These latter changes may be described under the heads of chronic osteitis and its consequences, and gummatous osteomyelitis.

Chronic Osteitis is characterised by the formation of new bone, layer by layer, so as greatly to increase the size of the affected bone. At the same time, the compact tissue becomes more spongy than natural; a small-celled infiltration takes place into the connective tissue surrounding the vessels in the Haversian canals and medulla. The gelatinous tissue more or less fills the cavities of the cancellated structure, the Haversian canals gradually become wider, and the affected portion of the bone is rendered soft and porous. If the process be now arrested, absorption may take place and the bone may gradually return to its normal condition. The deposit may, however, become ossified, and in the later stage the new tissue often becomes remarkably dense, the medullary structure and the Haversian canals being more or less filled up with a compact bony mass, and at the same time bony formation usually takes place on the surface. The bone thus becomes thicker and heavier, its consistence may resemble that of ivory. The growth is not limited, as in a node; but is widely diffused throughout the shaft of a long bone, or the bones of the skull. An opposite condition is sometimes induced as a result of chronic syphilitic osteitis. The deposit of gelatinous connective tissue is neither absorbed nor ossified; but while the medulla is extremely vascular and is filled with newly formed cells, the cortical portion becomes gradually absorbed and reduced to a thin layer. The bone is thus rendered soft and yielding, and has a yellowish appearance on section. It is not at all uncommon to find the two varieties, rarefactive and formative osteitis, going on simultaneously in one specimen.

Caries and Necrosis may be the further results of syphilitic osteitis. Caries is often seen in the cranial bones, and is liable to occur from the breaking down of a subperiosteal gumma. The diploë may be infiltrated with a soft gelatinous deposit which breaks down and becomes semi-purulent. The tissue of the bone is dissolved and softened, and the external table is finally perforated. These deposits may be either circumscribed by a thickened layer of bone covered by vascular granulations, or more or less diffused for some distance between the tables of the skull. This affection in its severe form constitutes the so-called "worm-eaten caries."

Syphilitic Necrosis, according to Virchow, usually proceeds from within outwards. A line of demarcation is formed, and a portion of necrosed bone, with enlarged pores and a worm-eaten appearance, is detached from the living bone. The edges of the latter, which are more and more indurated, become raised by the deposit of fresh layers of bone, and project beyond the necrosed portion. Similar lesions occur at a greater or less distance from each other, and their coalescence gives rise to extensive mischief and destruction of the cranial arch. Symptoms of irritation of the periosteum are at first either entirely absent or only slightly marked. The sequestra present numerous orifices leading into short, irregular canals which communicate with each other; this appearance is characteristic of syphilitic necrosis. In necrosis due to other causes, the sequestrum is smooth, polished and compact (Lancereaux). This syphilitic necrosis is due to gummatous deposit in the cancellated structure. When the process is somewhat advanced in the bone, the periosteum and the soft parts covering it become implicated and inflamed. Abscesses form, which eventually find their way to the surface, but not always at the spot corresponding to the seat of the lesion. Sinuses are often formed, owing to the pus burrowing in the loose connective tissue, and these remain open until the necrosed portions of bone come away or are removed. These cases of syphilitic disease of the bones, with long-continued suppuration, often present evidences of amyloid disease of internal organs, especially of the kidneys.

The gummatous osteomyelitis above described has been most frequently observed in the spongy tissue of the short bones, and in the diploë of the bones of the skull; but there is reason to believe that gummatous deposits also frequently occur in the cancellated tissue of long bones. Ricord has given drawings of gummata in the medulla of the radius and tibiæ, and Volkmann mentions one case in which a gumma in the middle of the diaphysis of the radius was the cause of spontaneous fracture. There are a few other cases on record of spontaneous fracture of long bones, due to gummatous deposit. Lancereaux states that gummatous lesions of the medullary cavity of bones are more frequent than would appear from the small number of cases known, and that the rarity of observations is evidently due to the inattention with which the anatomical examination of the osseous system is generally carried out. A similar opinion has been expressed by Dr. Chiari of Prague, founded upon twenty-seven post-mortem examinations of severe cases of syphilis. In nine of the cases he found gummata in the long bones, the femur and tibia being most often affected, and next to these the humerus and radius. Such growths differ from tubercular formations in the fact that the latter are more prone to extensive caseation, and under the microscope are found to contain miliary tubercles. In the above-mentioned cases, the gummata presented some differences of structure; some were soft and gelatinous, others fibrous, others again showed signs of caseation in the centre. Their size varied from that of a pea to that of a nut. In one case the tibiæ contained twenty gummata. The external surface of the affected bone is sometimes the seat of hyperostosis, but in other cases there is no appearance of change. As a general rule these gummata do not give rise to any subjective symptoms; some amount of pain may perhaps be complained of at the affected spot. With regard to their course, they may remain stationary for long periods and absorption may take place, or they may give rise to sclerosis of the bone, to necrosis, or to spontaneous fracture.

The bones which are most prone to become affected during the course of syphilis are those of the cranium, the clavicles, the sternum, and the tibiæ.

These bones are for the most part covered only by the integument, and they are particularly exposed to injury, cold, and other irritating influences. The bones of the hands and feet are very rarely affected. Periosteal affections of the scalp are particularly common, and often result in ossification or ulceration, while the bones are frequently the seat of caries and necrosis. Bony deposits due to periostitis are sometimes seen on the lower jaw, and more frequently on the clavicles, sternum, and tibiæ. The vertebræ may be the seat of gummatous lesions, presenting all the characters and symptoms of Potts' disease, and to be distinguished from tubercular disease only by the effect of special treatment.

The *symptoms* of syphilitic affections of the bones vary according to the position, extent, and nature of the lesions. Of the subjective symptoms pain is the most common, but is by no means invariably present. It is more marked in those cases in which the periosteum is affected, and where the long bones of the extremities and the cranial bones are the seats of the lesion. The pains are often very severe, and are described by the patients as well nigh unbearable. They are almost always, like the pains felt in the initial stages of syphilis, aggravated at night. When the bones of the head are affected, sleeplessness and giddiness are often experienced, and derangement of vision is sometimes noticed.

The objective symptoms also vary according to the nature of the lesion. As already described, periostitis causes swelling at the affected part, which is painful on pressure. The skin is tense and œdematous, and sometimes red and hot. Resolution and disappearance of all the symptoms may follow, but the effusion often becomes ossified, and osteophytes, exostoses, or nodes result. Gummata of the periosteum form rounded elastic swellings, not very painful on pressure. Gummata in the long bones, as above described, appear but seldom to give rise to any symptoms. If necrosis or caries occur, the ordinary symptoms of those affections will be manifested. The cicatrices which remain after ulceration in which the bones have been implicated, present certain peculiarities. The centre is remarkably depressed, while the circumference is elevated and thickened by irregularly-shaped deposits of bone. When the bone is completely destroyed, as often occurs in the facial bones, such as the vomer and the hard palate, no regeneration of bony tissue takes place. When a portion of a cranial bone becomes necrosed and detached, the dura mater, the bone, and the integuments become united together at the margin of the opening, which is eventually covered by a tough whitish layer. No new bone is formed in the cicatrix, but the surrounding portions become thickened by bony deposit.

In addition to the symptoms directly dependent upon the changes which occur in the bones and periosteum, syphilitic affections of these parts often give rise to secondary disturbances of a severe character. Nerves and vessels are sometimes compressed by bony growths situated in their neighbourhood, loss of function in the one case, and œdema in the other, being thus produced. Pain in the course of a nerve (neuralgia) is often due to the pressure of a syphilitic exostosis. Paralysis of muscles supplied by the facial nerve has been known to be caused by an exostosis of the temporal bone near the stylomastoid foramen. A similar lesion on the olivary process of the sphenoid bone, by compressing the commissure of the optic nerves, has given rise to total blindness, while deafness has resulted from bony growths in the meatus auditorius. Exophthalmos and paralysis of the muscles of the eyeball may be caused by an exostosis in the orbital cavity. Exostoses on the internal surface of the cranial bones may give rise to various cerebral symptoms—*e.g.*, epilepsy, convulsions, etc. Affections of the cranial bones leading to necrosis may set up meningitis. Exostoses of the vertebræ may produce pressure on the spinal cord, or on the œsophagus. Necrosis of the bones of the palate not infrequently causes a large opening to remain between the mouth and the nose, so that the two cavities freely communicate. Amyloid degeneration of many internal organs, as a result of those syphilitic affections of the bones which are attended with suppuration, has been already referred to.

With regard to the *diagnosis* of syphilitic affections of the bones, there is, as a general rule, not much difficulty in distinguishing them, provided that the antecedents of the patients are taken into account. Tubercle and syphilis are the most frequent causes of chronic disease of the bones, and a combination of the two conditions gives rise to the worst form of these lesions. Tubercle, however, especially affects the epiphyses of the long bones, the bodies of the vertebræ and the bones of the hands and feet, and the patients are generally young, and present other signs of the disease. Syphilis, on the other hand, is more prone to affect the bones of the skull, the shinbones, the clavicles and the sternum. Other signs of syphilis generally, but by no means always, co-exist. Syphilitic bony lesions are sometimes developed at a very late period, and at a time when all other manifestations of the disease have long ceased to appear. The local process can rarely be traced to the action of any well-defined cause, whereas in tubercle a slight injury frequently sets up a chronic affection of the bones. The hereditary form of syphilis is characterised by special affections of certain bones. These will be described in a subsequent chapter.

It is needless to discuss at length the assertions, once so frequently made, to the effect that the bony lesions attributed to syphilis, are in reality due either to mercury, or to a combination of mercury and syphilis. It is now universally recognised that the severest forms of bone-affections—viz., gummata, exostoses, caries and necrosis—may and do occur as symptoms of syphilis in the treatment of which no mercury has been administered. On the other hand, it is well known that the bony lesions which mercury indubitably causes, when its use is persisted in for a long time, are confined to certain parts of the skeleton—*i.e.*, the upper and lower jaw-bones—and are always preceded by a peculiar inflammatory condition of the mucous membrane covering those bones. The mischief begins in this membrane, ulceration and sloughing are set up, and periostitis follows, with caries or necrosis as a possible result. No other bones of the skeleton are similarly affected; the process is purely a local one, and secondary to the inflammation set up by the mercury in the mucous membrane of the mouth.

Treatment.—The details of the constitutional treatment of syphilis will be found in the chapter devoted to this subject. With regard, however, to these affections of the bones, it may be here mentioned that iodide of potassium is the remedy to be employed, and it is one that very rarely disappoints our expectations, if given in proper doses and for a sufficient length of time. Large quantities, such as 60 to 100 or more grains in the twenty-four hours, must be administered in divided doses, and seltzer water or some effervescing combination forms a good vehicle. A few grains of carbonate of ammonium may be added to each dose. It is generally advisable to give the patient a mercurial course after the prominent symptoms have been relieved by the iodide treatment. Severe pain will require opium. The nodes and other swellings should not be interfered with, unless suppuration has really occurred, in which case incisions may be necessary. Caries and necrosis must be dealt with according to the ordinary rules of surgery.

Syphilitic Diseases of the Joints.

Various affections of the joints are liable to occur as results of syphilitic infection, but they are far less common than the majority of the other special manifestations. The period of the secondary eruption is sometimes attended with articular pain and swelling, of an acute character and resembling rheumatism. The knees, elbows, and ankles, are commonly involved; though the smaller joints, and especially the carpo-metacarpal joint of the thumb, are not infrequently affected. There is a moderate amount of effusion; the skin over the joint is not congested, and there is generally no febrile disturbance. The amount of pain varies, but as a rule it is slight.

In the later periods of the disease, four varieties of joint affections are recognised:—

1. Arthritis, resulting from peri-synovial gummatous infiltration.
2. Arthritis, secondary to gummatous osteitis, or periosteal nodes in the neighbouring bone.
3. Chronic synovitis, with gummatous infiltration of the capsule.
4. Syphilitic chondro-arthritis.

1. **Peri-synovial Gummata** are more liable to

attack the knee and elbow joints, and appear to be more prone to occur in women than in men.

There is generally some synovitis present, and hard, square or ovoid masses can be detected in the peri-synovial tissues. When the knee is affected these gummatous masses are generally found near the superior cul-de-sac of the synovial membrane, and have been mistaken for loose cartilages. The gummata may break down and discharge externally; but in exceptional cases they may burst into the joint, and in the case of the knee joint, necrosis of the patella may complicate matters. In the elbow joint, the gummatous infiltration has a predilection for the hollow below the epitrochlea, and the ulnar nerve will be implicated. This form of arthritis may be diagnosed from the specific character of the ulcers, and the general history.

2. **Arthritis secondary to Periosteal Nodes or Gummatous Osteitis.**—There is usually a history of a swelling, involving the bone close to a joint, which has existed for some time, and the synovitis appears as a secondary symptom. Severe pain, which is worse at night, is generally present. This form of arthritis is likely to be mistaken for osteosarcoma involving the epiphysis.

3. **Chronic Synovitis,** with gummatous thickening of the capsule, simulates tubercular arthritis, and has been described by Richet and Fournier under the name of "pseudo-tumor albus." It is the commonest form of syphilitic arthritis, and generally affects the knee joint; the symptoms are of a chronic and less severe character. They consist in more or less pain, generally worse at night, and swelling of the articulation in consequence of inflammatory effusion into the synovial capsule or infiltration of the fibrous structures outside the joint. The swelling is

not very tense, and its quantity is subject to intermittent variations; on each side of the ligamentum patellæ the swelling is more firm and elastic, and sometimes decidedly indurated masses can be felt at other parts. There may be more or less fever, of a decidedly remittent type, but this is not general; movement of the limb is not interfered with in the early stages, and the patient is seldom confined to bed. The swelling is out of proportion to the pain, and the symptoms subside under appropriate treatment. Very few opportunities have occurred for examining the joint post mortem. In one case, reported by Lancereaux, of a woman who died from bronchitis, complicated by intense syphilitic cachexia, many internal organs contained gummatous growths, while both knee-joints were enlarged and each contained several ounces of a yellowish turbid serum. The synovial membranes, thickened and at the same time injected, were studded with several small pseudo-membranous deposits. The articular surface of the left external condyle was eroded and ulcerated at one point, and the articular cartilages of both patellæ were in the same condition. On the right side, a part of the ligamentum patellæ, the fatty cushion behind the synovial bursa, and all the fibrous tissues attached around the tibia, were changed into a uniform greyish-yellow elastic mass, about an inch and a-half thick at the median line. This mass resembled the gummatous formations found in the liver. The left joint was similarly affected. There could be no doubt as to the nature of the growth in the joints. It resembled in consistence, colour and histological structure, the products of syphilis met with in the viscera. Lancereaux points out that the lesions in this case were clearly distinguishable from those of scrofulous disease which has for its starting-point the synovial membrane, and is characterised by the presence of soft fungous and vascular masses; they differ also from those found in rheumatic joint-affections in which there are never any deposits resembling the gummatous formations. The symptoms which the lesions produce are characterised by their slight intensity and the slowness of their development. Relapses are frequent, and the symptoms are generally aggravated by exposure to cold and damp.

4. **Syphilitic Chondro-arthritis** is a later stage of the preceding, in which the cartilages become involved, with contraction and fibrous ankylosis. The condition has been especially studied by Virchow. The change in the cartilage consists of thinning and fibrillation, together with the production of pits in the articular surfaces of the bone, which are lined with fibrous tissue, and surrounded by tufts. They are due to subchondral gummata which have been replaced by cicatricial tissue. Syphilitic chondro-arthritis is likely to be mistaken for arthritis deformans, but as a rule occurs in younger subjects than is the case with the latter disease. The site of the pits does not appear to be due to pressure; there are no osteophytes, and the china-like eburnations are absent.

The *diagnosis* must be aided by the history of the case, but the arthritis may be the only symptom present of tertiary disease; the symptoms resemble those of tubercle and rheumatism. In joint-disease due to the former affection, the swelling is considerable and somewhat rapidly increases; movement soon becomes difficult, and ankylosis is a common result. In rheumatic arthritis several joints are usually affected at the same time.

Syphilis has a tendency to affect certain small joints of the hands and feet. The complaint is called *dactylitis syphilitica.* The bones, as well as the other structures of the joints, are implicated in this lesion. The affected joint is much swollen, so that the fingers cannot be brought together as before. The finger is also much enlarged, and bluish in colour from capillary congestion. The swelling is tense and elastic, and does not pit on pressure; it is especially marked on the dorsal surface. Movement is more or less interfered with, and sometimes crepitation can be felt. The first and second joints of the fingers are those which are most often affected, but the metacarpo-phalangeal joints are sometimes thus swollen. The pain is usually slight, and the part is not very tender to the touch.

Two varieties of this affection exist: in the first, which occurs in the later part of the secondary stage, the fibrous tissues of the joints are the parts mostly implicated; in the second form, the symptoms are due to syphilitic periostitis, osteitis, or osteomyelitis, and occur at lengthened periods after infection. The lesion is of a more serious character, and may terminate in destruction of cartilage and more or less immobility of the joint. The effusion sometimes becomes purulent, and occasionally the integument gives way and a fistulous opening results. Dactylitis syphilitica is an occasional symptom of the inherited form of the disease (see chapter on "Hereditary Syphilis").

The *diagnosis* has to be made from tubercular dactylitis, rheumatic arthritis, enchondroma, exostosis, and gout, and special attention must be directed to any co-existing symptoms and to the past history of the case.

The constitutional *treatment* of these joint-affections consists in the administration of iodide of potassium in full doses. Should the symptoms not yield, a course of mercury may be prescribed. Local measures must be resorted to when suppuration occurs, and the disease must be treated on general surgical principles.

SYPHILITIC AFFECTIONS OF THE BURSÆ.

These occur both in the secondary and in the tertiary stages of syphilis. The secondary affections consist of an acute inflammation of the bursa, with pain, redness, heat, and swelling. It usually subsides completely under mercury. In the tertiary stages, the bursæ are sometimes the seat of gummatous formations. Those connected with the knee-joint, and particularly the patellar bursa, are most often affected. It will be found that in the majority of cases, an injury is alleged to be the exciting cause of the swelling, but there is never any pain until the integument becomes implicated. The skin may become dark red in colour and occasionally ulceration sets in. Fluctuation is rarely present, the process consisting in thickening and infiltration. The swelling slowly develops, and always subsides under antisyphilitic treatment. There is often a pre-existing gouty or rheumatic taint. The recognition of syphilitic bursitis must depend upon a consideration of various points, which are thus given by Fournier. 1. The history of a primary lesion. 2. Observation of the comparative frequency with which such diseases occur in syphilitic subjects, especially in women. 3. The association of bursal affections with other secondary manifestations, or with gummata in the tertiary period. 4. The presence elsewhere of decidedly specific lesions. 5. Symmetry of the lesions, though this is by no means invariable. 6. The development of the disease simultaneously with other lesions, and subject to the general evolution of the diathesis. 7. The absence of any other assignable cause. 8. The failure of ordinary measures, but speedy recovery under specific treatment.

Syphilitic Affections of Cartilage.

It is doubtful whether the articular cartilages are independently affected in the course of syphilis; but they sometimes become softened and eroded as a consequence of extension of disease from the bones or the synovial membrane, and this condition has been described when treating of diseases of joints. With regard to other cartilages, the same remark holds good; but some of them, and especially the cartilages of the nose and larynx, often become seriously changed in consequence of the extension of disease from the integument or mucous membrane covering them. Lancereaux states that only those cartilages which have a fibrous covering or perichondrium, are liable to be attacked. In the mildest form, as in slight affections of the mucous membrane, the cartilage is apt to become eroded or even perforated; but the mischief does not extend, and the adjoining portions remain normal. Sometimes only the free border of the cartilage, as in the larynx, is superficially ulcerated, and presents a honey-combed or irregularly serrated edge. In the thyroid cartilage, several changes, of a more serious character, are not infrequently seen. Perichondritis sometimes sets in, and is followed by a process of partial ossification. The part loses its elasticity, and is tender on pressure. Some amount of crepitation may sometimes be heard. The function of the part is seriously disturbed in consequence of the loss of elasticity and of the changes in the adjacent structures, such as the thickening of the mucous membrane and ligaments, and especially of the vocal cords. Caries and necrosis are, however, not frequent results of syphilis of the larynx, as in tuberculosis and malignant disease. In one case recorded by Lancereaux, the pneumonia which caused the patient's death was the result of disease in the larynx, the cartilages of which were almost completely destroyed, denuded and ossified fragments being all that remained. Caries of the cricoid cartilage is sometimes seen as the result of ulceration of the mucous membrane, and the mischief occasionally spreads to the arytenoid cartilages, which become ossified and necrosed. They are apt to become detached, in which case one or both may be coughed up; or, acting as a foreign body, may give rise to the formation of an abscess in the neck. The costal cartilages appear to be liable to similar changes, but they are very rarely affected. The affections of the cartilages of the nose have been already described (see page 190).

SYPHILITIC AFFECTIONS OF THE MUSCLES AND TENDONS.

Syphilis affects the muscles in three ways; early in the course of syphilis, acute irritative myositis may occur, and give rise to the muscular pains resembling rheumatism, so often complained of at this time. The muscles involved are tender and painful when moved. In severe cases temporary contractions of the muscle occur, and this condition is usually confined to the biceps of the arm. Later in the course of the disease diffused infiltration (chronic interstitial myositis) occurs as well as circumscribed lesions or true gummata. The latter affection is the more common.

Interstitial myositis is caused by the deposit of a small-celled infiltration between the bundles of the muscle fibres, and emanating from the perimysium. The muscle first becomes thicker and shorter; but absorption soon takes place, with atrophy and fibrous degeneration as a result. Virchow describes the changes as being similar to those produced by simple rheumatic or traumatic inflammation; the interstitial tissue of the bundles of muscular fibres is the seat of development of connective tissue, which becomes indurated and leads to atrophy and destruction of the muscular fibrils. It is probable that both the muscular sheaths and the prolongations therefrom between the fibres are thus infiltrated. The lesion is frequently found combined with the gummatous form.

When gummata are developed, the infiltration takes place in circumscribed portions of the connective tissue between the muscles or the fasciculi. These growths resemble similar tumours of the subcutaneous connective tissue. They are reddish-grey at first, and afterwards become yellowish. They may attain the size of a nut or a walnut, and they vary in consistence, being sometimes soft and almost diffluent, and sometimes firm and elastic.

Both forms of myositis are accompanied by slight pain, especially felt on moving the muscle. Diffused myositis gives rise to contraction, and the pain is felt chiefly at the points to which the muscle is attached. The biceps of the arm is the muscle most frequently affected. The first symptom, which may appear about a year after infection, is stiffness of the elbow; the patient finds it difficult to extend the arm, and if force is applied the biceps may be felt to resist the extension. In marked cases the forearm becomes flexed at a right angle. No circumscribed tumours can be felt; the muscle generally is hard and tense.

When gummatous formations take place in a muscle, retraction is not a necessary symptom. If the tumours are superficial, they may be felt as resistant, firm nodules, more or less globular in form, easily isolated when the muscle is at rest. The long axis of the growth usually coincides with that of the muscle. They give rise to little or no pain, but more or less interfere with the action of the muscle. Such growths become developed slowly, and may disappear spontaneously, or their disintegration may result in suppuration and discharge externally; when softening takes place they may be mistaken for an abscess. Sometimes they become fibrous and undergo calcareous degeneration. Absorption is, however, the most frequent termination. The middle portions of muscles are the ordinary seats of these growths. Less frequently they are found near the attachments. The biceps of the arm is most often affected, and next to it come the biceps femoris, the pectoralis major, the sterno-mastoid, the masseter, and the rectus muscle of the abdomen. It often happens that several muscles are invaded at the same time. Gummata sometimes occur in the heart (see p. 217), and give rise to serious symptoms.

Myositis ossificans has been observed spreading from a syphilitic periostitis ossificans. It commences at the bony attachment of the muscle.

The *diagnosis* of syphilitic myositis must be made by the aid of the concomitant symptoms, such as exostoses, ulcers of the pharynx, gummatous growths in the skin, etc., which are usually present. In the diffused form the symptoms resemble those of rheumatism. If the tumours can be felt, the diagnosis is for the most part easy. If suppuration takes place, the appearances are those of an ordinary abscess. The process, however, is less acute, and the discharge is thin, muco-purulent, and sanious. The opening is small, and the cavity shows no tendency to rapid closure, but continues to discharge a thin glairy fluid. Reparation and cicatrisation are slow and tedious, and the opening does not close until the whole of the new formation has become disintegrated.

Atrophy of muscles from interference with the nerve supply, due to pressure from a gumma, is occasionally seen, and might be mistaken for progressive muscular atrophy.

SYPHILITIC AFFECTIONS OF THE TENDONS AND TENDINOUS SHEATHS.

The tendons, like the muscles, are occasionally the seat of syphilitic changes. The lesions consist in simple and partial thickening, owing to plastic infiltration, and the development of small gummatous tumours or growths of a circumscribed character. The tendons most frequently affected are the tendo Achillis, the tendons of the biceps and triceps, the patellar tendon, the tendinous attachment of the sterno-cleido-mastoid muscle, and the flexor and extensor tendons of the fingers. Serous effusions also occasionally take place into the sheaths of certain tendons, especially those of the extensors of the fingers. Fournier has described several instances of this latter condition. The exudation is considerable, the fluctuation very distinct; sometimes the integument is unaltered, but sometimes it is reddened and painful. In other cases fluctuation is scarcely perceptible, the swelling is of a doughy character, and sometimes there are scarcely any external changes, but the tendon is painful on pressure and the movement of the finger is interfered with. True gummatous formations may also develop in the sheaths of tendons. Thus in a case recorded by Mr. Nunn, a palish yellow tumour, of the size of half an orange, formed above the tendons on the dorsum of the foot, in a man forty-five years of age, who had suffered from syphilis for twenty years. Ulceration had taken place, and the contents of the tumour were evacuated. A similar formation, with like results, had taken place some time before over the tendons at the inner side of the knee. Another case has been reported in which, fifteen years after infection, a gummatous growth became developed in the tendinous sheath of the peroneus brevis of the right side.

In the case of the tendons themselves, the gummatous formations may be developed either on the surface or in their substance. They are usually superficial, and project more or less abruptly above the surface of the tendons. When more deeply seated they cause the tendinous fibres to separate, the growths themselves becoming elongated and fusiform. Movements are more or less interfered with, and the tumours are sometimes painful. In a few cases the integument becomes red, inflamed, and ulcerated, and the gummatous mass is gradually discharged. Troublesome and chronic sores result, healing being impeded by the movements of the muscles.

The *diagnosis* must be made by the aid of the history of the case and of any co-existing symptoms. The *treatment* consists in the administration of iodide of potassium, with a subsequent course of mercury, and the local application of the liniment of iodine.

CHAPTER XVII.

SECONDARY AND TERTIARY SYPHILITIC AFFECTIONS OF THE ORGANS OF GENERATION.

In the male subject, during the eruptive stage, the integument of the glans penis is occasionally marked by roseolar patches, which more or less speedily disappear. It sometimes happens, however, that a diffuse erysipelatous redness appears on the inner layer of the prepuce, and the fossa behind the glans, and sets up a somewhat acute catarrhal condition of these parts. The prepuce beomes inflamed, thickened, and of a deep red colour, and more or less secretion is poured forth by the glands. Without proper examination, the case may easily be mistaken for one of ordinary balano-posthitis. In the syphilitic affection, however, other indications of the disease, such as an induration on the penis or some eruption on the skin or in the throat, will invariably be present. Moreover, the symptoms are of a milder character than those of balanitis, which generally produces great swelling of the prepuce and of the integument of the penis, and sometimes acute inflammation of the lymphatic vessels and profuse secretion between the prepuce and the glans. Even in syphilitic cases, if the catarrhal secretion be allowed to accumulate, there is likely to be considerable excoriation of the glans and prepuce. Under such circumstances, the sores might be erroneously regarded as of a primary character, and the subsequent symptoms might then be attributed to a "soft" sore. Such an error can be easily avoided by a proper examination of the patient.

Erythema of the Vulva sometimes occurs in women recently infected with syphilis. The mucous membrane is reddened and covered with secretion, the labia are more or less œdematous, and the redness extends for some distance into the vagina. Erosions, similar to those on the prepuce, sometimes occur, and may give rise to errors of diagnosis. The secretion readily becomes very abundant unless great cleanliness be observed, and the irritation is apt to spread to the vulvo-vaginal and sebaceous glands. A male, who has had connection with a woman thus affected, is sure to suffer from urethritis, but he may escape syphilis. If, however, the muco-purulent catarrh of the vagina be associated with mucous patches of the vulva or of the os uteri, syphilis will almost certainly be communicated.

Mucous Papules are very common on the genital organs of both sexes, and they are found in various stages and of different sizes. In the male subject they are most frequently met with in the fossa behind the glans, on the margin of the prepuce, and at the orifice of the urethra; in women they are found on the vulva, especially on the inner surface of the labia majora and on the labia minora, in the upper part of the vagina and on the vaginal portion of the uterus. The region of the anus, in both sexes, is a common seat of mucous patches. They vary much in appearance; one variety often occurs with roseola and miliary cutaneous papules. Others are much larger and rounded in form. Those situated on the cutaneous surface consist of thickening and proliferation of the superficial layers of the skin, and their surface is red, smooth, and polished, and either dry or slightly moist; they are often more or less eroded. On the mucous membrane of the vulva the papules are softer and of a lighter colour, owing to persistent contact with the secretions of the part, and they are often extensively eroded or ulcerated and inflamed, and discharging profusely. They are sometimes covered with a diphtheritic false membrane, and they often send out prolongations or vegetations. It also not infrequently happens that an ulcerated mucous patch has an inflamed and indurated base which closely resembles that of a chancre. The diagnosis, in such a case, is made clear by the discovery of other mucous patches and secondary symptoms elsewhere. It must be remembered, however, that the chancre is occasionally converted into a mucous papule—a process which Ricord designated "transformatio in sitû." As a matter of course, the discharges from these lesions are of a highly contagious character, and they may give rise, not only to chancres but to moist papules or condylomata, which are followed by constitutional symptoms. These growths on the mucous surface of the vulva often cause the labia minora to become œdematous. When they occur in an aggravated form and are neglected, they increase in size and become confluent, and in this way form large, soft, greyish-red, irregular, fungoid masses, covering the external genitals and extending from the pubes to the anus and laterally to the groins and upper parts of the thighs. They are covered with a profuse muco-purulent or sanious secretion, of a highly irritating character, and with a peculiarly offensive odour. Such growths are seen in the lower classes of prostitutes who pay no attention to cleanliness. They subside rapidly under proper treatment and ablution.

The most frequent complications of these growths are abscesses of the vulvo-vaginal glands, vaginitis, and inflammation of the cervical canal of the uterus.

The vulva is occasionally the seat of a later manifestation of syphilis, which is characterised by a hard, brawny, œdematous swelling, with development of much connective tissue, associated with much ulceration. This condition has been described as lupus, but the probabilities are greatly in favour of its being syphilitic, and it generally occurs in the lowest class of prostitutes, who are always dissolute and careless as regards their person. The disease is very chronic, and is only got rid of by antisyphilitic treatment, combined with strict cleanliness. I have frequently seen this condition in patients attending the Lock Hospital, and have noted that after being cured by vigorous treatment, the disease is very liable to recur owing to the filthy habits of this class of women.

The *treatment* of these growths consists, first and foremost, in cleanliness and rest. After thorough washing and drying, they should be dusted over with a mixture of calomel and oxide of zinc, equal proportions, and lint should then be applied so as to keep the parts from contact. This dressing should be frequently renewed. Mercurial treatment must of course be adopted, and the local treatment must be persevered with until the growths have disappeared. Relapses are very apt to occur. If the growths prove very obstinate, superficial cauterisation from time to time with nitrate of silver will expedite their removal.

Gummata sometimes occur on the mucous membrane of the genital organs in both sexes. In the male subject, they are most common on the inner surface of the prepuce, and they are sometimes found in the urethra close to the meatus. In women, they occur in the labia majora and minora and near the inferior commissure of the vagina. They may be either single, or two or three may be found close together. In the latter case they are apt to become confluent, and their disintegration causes superficial ulcers, varying in size. Gummatous growths but rarely occur in the vagina. They do, however, sometimes give rise to more or less deep ulceration and subsequent contraction of this canal. With regard to the female urethra Virchow states that ulcerations and cicatrices sometimes follow gummatous deposits, and have exactly the same character as those of the larynx. He has described one case in which the ulceration extended to the bladder and was followed by cicatrisation. Gummata occurring in the tissue of the male urethra, diminish the calibre of the canal, and may also become disintegrated and give rise to fistulous openings at the posterior surface of the corpus spongiosum. Zeissl states that they are most frequently situated close to the urethral orifice. The same form of growth occasionally invades the corpora cavernosa. A small induration is first noticed by the patient, and this gradually increases in size, but without causing pain. As the induration extends, the affected portion loses more or less of its erectile capacity, and if the induration be very considerable, only the corpus cavernosum of the sound half is capable of distension, and the penis, during erection, describes a curved line with a lateral concavity. If the induration is on the dorsum of the penis, the organ becomes curved upwards and backwards towards the pubes.

Ulcers due to the disintegration of gummatous growths differ from primary ulcers in the slowness of their development and by their less rapid cicatrisation, which does not occur until all the new formation has been removed. They sometimes assume a crescentic shape, and are always associated with other manifestations of syphilis. A patient suffering from such an ulcer is apt to believe that he has recently contracted syphilis, for these gummata appear five or six years after the primary lesion. It is remarkable that a gummatous growth sometimes occupies the site of an original chancre. If the base of such an ulcer is hard it may be difficult to distinguish it from an indurated sore; the diagnosis must be made from the history of the case and with the aid of the co-existing symptoms, such as diseases of the bones, etc. If, on the other hand, the edges and base of the ulcer are destitute of hardness, it may be mistaken for a soft sore. The secretion from the latter is, however, auto-inoculable. It is important to distinguish between the primary and the tertiary ulcerations, inasmuch as the latter require for their treatment large doses of iodide of potassium, while the former (if of a truly syphilitic nature) require mercurials.

SYPHILITIC AFFECTIONS OF THE TESTICLE AND OF THE EPIDIDYMIS.

Syphilis affects the testicle proper during the later stages of the disease. It occurs in two forms. In the first, the morbid process affects the tunica albuginea and its prolongations into the substance of the gland, and induces the formation of new connective tissue. The second is characterised by the development of gummatous growths (see Pl. XVIII., Fig. 2). These processes may co-exist; they have, indeed, been regarded as identical, the first as being due to *diffused* gummatous formation and the second to *nodular* deposits. Virchow has described a form of inflammation of the tunica vaginalis, due to syphilis, and causing adhesions between the visceral and parietal portions. When the gland is involved, the new connective tissue presses upon the tubules and causes their absorption and decay. Separate lobes are especially affected, and the gland becomes nodulated and hard, and loses its normal form. The bands of connective tissue are visible on section, and there are often small caseous masses, the remains of gummatous nodules. The processes are similar to those which are observed in the liver.

Syphilitic Orchitis rarely appears until the second or third year, but it may occur earlier than this, or much later. Pustular eruptions and gummatous formations in other parts may co-exist, but it is frequently the only sign of syphilis present. The symptoms of the diffuse form consist in a gradual enlargement of the gland. It rarely happens that any pain is complained of, and if it does occur it is due to the increased weight of the organ exciting aching along the cord, as the swelling is not particularly sensitive on pressure. There is frequently a co-existing hydrocele, which first directs attention to the testicles, unless the sac of the tunica vaginalis is obliterated by being involved as described above. After a time the enlargement subsides, and, unless treated, contraction of the new tissue will produce atrophy of the organ. In the gummatous form the gland is felt to be hard and nodulated and craggy, the nodules being particularly firm and resistant. Later on the swelling increases, and the surface becomes more uniform; the tumour is extremely hard, and may be twice or thrice as large as the normal gland. Testicular sensation is greatly diminished or entirely lost. The epididymis and the vas deferens are generally unaffected, but sometimes these parts are enlarged and indurated from extension of the process. The disease may involve one or both testicles at the same time, or may affect first one and afterwards the other. The course of the affection, left to itself, is generally tedious, and the swelling is apt to reappear from time to time after subsidence. As a general rule, the deposit becomes absorbed, and the gland regains its normal size and consistence. Sometimes, however, the contraction of the newly-formed connective tissue leads to partial or complete atrophy of the testicle. If, however, the case is not treated or the symptoms recognised, it is not uncommon for the scrotum to become adherent opposite one of the gummata, which breaks down and discharges. The pressure from behind causes the granulations to protrude, this condition being known as benign fungus of the testicle. If both glands are involved and atrophy occurs, their function will be seriously affected, and complete impotence may result. Even where the atrophy is incomplete, the semen secreted by a syphilitic testicle is generally deficient in spermatozoa.

Diagnosis.—Gonorrhœal epididymitis, tubercular deposit, and cancer, are the conditions which most resemble syphilitic orchitis.

Epididymitis is accompanied by feverishness and severe pain, which extends to the groin and back; the scrotum is red, hot, and tense, and all movements are painful. The gonorrhœa continues, or the discharge may have ceased temporarily. There is generally some amount of effusion in the tunica vaginalis. The inflammation rarely extends to the body of the gland, but the spermatic cord is always implicated.

Tubercular disease of the testicle begins in the epididymis, whence it spreads to the gland. It occurs in young subjects of a tubercular habit. The deposit takes place in the tubules and ends in caseation or suppuration. Its progress is slow; the testicle becomes hard, knotty, and irregular. The nodules become adherent to the tunica vaginalis and integument of the scrotum, and abscesses form, followed by fistulous openings. Both testicles may be affected, and the tumours are painful to the touch. There are generally other antecedents or evidence of tuberculosis when the condition is advanced enough to simulate syphilitic disease; the cord, prostate and vesiculæ seminales will probably be involved.

Cancer of the testicle is usually of the encephaloid variety. It begins in the body of the organ, by the development of small nodules in the tubules. The nodules increase, and the testicle soon assumes an irregular form. The gland is at first hard and heavy, but it soon becomes elastic and tense, and severe pain is felt. The skin of the scrotum is rapidly implicated and gives way, and fungoid masses protrude from the openings. The inguinal glands are enlarged and indurated. The tumour grows very rapidly, and often attains an immense size.

The *treatment* of syphilitic orchitis consists in the administration of mercury, and of iodide of potassium in large doses. Mercury is best administered by inunction or by intra-muscular injection. I (E. C.) have noted more than once that whilst the patient is well under the influence of mercury and the testicle is diminishing in size, the other one suddenly begins to enlarge up to a certain point, and then subsides.

One must never be tempted to remove a syphilitic testicle, as under proper treatment the worst-looking cases will rapidly improve. The patient should be kept at rest as much as possible, and the part should be supported by a suspensory bandage or by strapping.

The epididymis is not uncommonly affected in the secondary stage, and very occasionally is involved in the later period of syphilis. The earlier affection consists of a small induration situated in the globus major; it is indolent, and painless; its size is that of a pea or bean. It occurs at a comparatively early period, from four to twelve months after infection. It may appear on one or on both sides. The deposit is supposed to be in the connective tissue of the ducts and not in the ducts themselves, inasmuch as the secretion and function of the part is not interfered with. The affection rarely spreads beyond the globus major, and there is no simultaneous enlargement of the testicle. This enlargement of the globus major is probably of much more frequent occurrence than is usually supposed; but, giving rise to no pain or inconvenience, and occurring at a time when most patients are taking mercury, it frequently escapes notice. The swelling, if neglected, remains for a lengthened period without undergoing any change, but it rapidly disappears under mercurial treatment.

True gumma affecting the epididymis primarily is rare; but, as before noted, it is not uncommon to find this part involved from extension of the disease of the testis. The following case is interesting in connection with this subject. A. B., a young man aged twenty-five, pale and thin, consulted me (E. C.) with regard to a nodule, about the size of a small walnut, in the right epididymis. He was married, was the father of two healthy children, strongly denied ever having had syphilis. Left apex dull on percussion, and the whole aspect of patient suggested tubercular disease. The swelling was tender on pressure, and semi-fluctuating. Under the impression that the disease was tubercular, the testicle was removed, but the lesion was found to be a gumma affecting the epididymis.

Affections of the Ovaries and Uterus.

But little is known as to the manner in which syphilis affects these organs. Virchow believes that inflammation of the ovary may be directly due to syphilitic infection; but he is unable to say whether it results in anything more than fibroid induration. A few cases, however, have been recorded in which the ovaries were the seat of gummatous deposits. In one of these, reported by Lebert, the organs in question contained several whitish nodules, some isolated, and others confluent; while abundant indications of syphilis, in the form of gummata, ulcers and cicatrices, existed in other parts.

In other cases, mentioned by various authors, the changes presumed to be due to syphilis were of a very doubtful character. It would seem, however, that the ovaries, from their fibrous structure, would be likely to be invaded by syphilitic lesions. Such lesions as are known are analogous to those of the testicles, and they are probably due to the same anatomical changes, viz., the diffused and the circumscribed deposits. Lancereaux has observed only the atrophic state of the diffused form. He states that the symptoms of these affections are but of an indefinite character. They consist of a slight, dull pain; more or less swelling, and, if both organs are affected, loss of sexual desire and sterility. The diagnosis must be made by the aid of co-existing symptoms. Iodide of potassium is the remedy to be used, if the ovaries of a syphilitic subject become swollen and painful.

The Fallopian tubes are occasionally the seat of gummata, which condition is very difficult to diagnose from salpingitis, especially when it is remembered that gonorrhœa frequently co-exists in such cases. In a doubtful case, the exhibition of iodide of potassium will clear the way.

Besides the initial lesion and the occasional occurrence of secondary syphilides during the general eruption, few if any changes in the uterus can be positively referred to syphilis, though it would appear probable that interstitial inflammation and gummatous tumours occur in this organ. Dr. Aimé Martin has, however, described a syphilitic hypertrophy, accompanied by ulceration, of the neck of the uterus; and he states that this affection occurs in nearly half the total number of cases of syphilitic women. The condition is apparently not due to gummatous infiltration. The ulceration is only superficial; the secretion is scanty and muco-purulent and of a highly contagious nature. The symptoms and appearances subside during a course of mercury.

Wet-nursing not being very general at the present time, chancre of the nipple from this cause is decidedly rare, but one meets with it occasionally as the result of other practices. As a co-existing symptom, there will be enlargement of the axillary glands and of the lymphatics leading from the breast to the axilla. The mammary glands are the occasional seat of gummatous growths—in some cases of a diffused, in others of a circumscribed character. The affection is said to be almost always symmetrical, it is less rapid in its growth than cancer, and far less prone to become ulcerated. Moreover, the swelling subsides under the influence of iodide of potassium.

It will be convenient here to consider the changes that syphilis may produce in the placenta. In cases of contagious diseases where the fœtus acquires the disorder from the mother, it is through the medium of the placenta, and *à priori*, we should expect that syphilis would act in the same way, and this is probably true, although it has not yet been definitely proved. The question whether a healthy ovum can be infected at the time of conception by the spermatozoa of a syphilitic male, without infecting the mother at the same time, has not yet been by any means satisfactorily determined, and although an affirmative opinion is held by many syphilographers, I must state my conviction that such a view in the light of our present knowledge is extremely unlikely. It may be that future investigation will confirm this view, still I hold at the present time that sufficient trustworthy evidence has not been brought forward, and until much more definite proof is adduced on its behalf I hold that the theory is "non-proven."

The first investigator to call attention to the relation between repeated abortions and syphilis was Astruc; but he ascribed the abortion to syphilitic disease of the fœtus, and did not investigate the condition of the placenta. Murat, and later on Dubois and others, directed attention to the fact that syphilitic women were liable to disease of the placenta; but very little attention appears to have been paid to this condition by gynæcologists and obstetricians in general. Virchow, Fränkel, and others have investigated the subject, but even at the present time our knowledge of the way in which the placenta is affected in syphilis is far from perfect; it is a subject well worthy of investigation, and one which might be undertaken at one of the lying-in hospitals. According to Fränkel, the seat of the disease may be either in the maternal or in the fœtal portion of the placenta, or the blood-vessels of the umbilical cord may be affected. Syphilis affecting the maternal portion was described by Virchow under the name of "Endometritis decidualis," which consists of a gummatous infiltration with marked increase in size of the placenta. According to Ercolani,* a fact as to which all observers agree, is the massive form which the fœtal villi assume; but as to the nature and seat of this enlargement there are various opinions, especially as to whether the maternal or the fœtal structures are originally implicated. The opinions entertained must necessarily differ, according to the idea held of the anatomy of the villi. Ercolani describes, as the first stage, an infiltration into the elements of the affected organ of small round cells, with a gummatous degeneration of the infiltrated tissues in the later stages.

The vessels of the cord may be affected in the manner described on p. 219.

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* "Bulletino delle Scienze Med., 1883," and "Annali Universali de Medicina, 1883."

CHAPTER XVIII.

SYPHILITIC AFFECTIONS OF THE EYE.

With the exception of the crystalline lens, all the parts of which the eye is composed are liable to be affected in syphilis; but it is only in comparatively modern times, that the connection between the constitutional disorder and the local manifestations in the organ of vision has been properly recognised. It is true that the term "syphilitic ophthalmia" was in use at the beginning of the present century, but it was applied only to affections of the iris and of the anterior parts of the eye. Other lesions were, however, attributed to syphilis, and were treated more or less successfully with mercury, but they were all grouped under the general and vague term *amaurosis.* It was not until the discovery of the ophthalmoscope that the existence and nature of the more deeply seated lesions—namely, those of the choroid, retina, and optic nerve—were ascertained and demonstrated.

Syphilitic Affections of the Eye may be divided into two principal classes. The first class includes those lesions and disorders which are the direct consequences of the infection; the second, those affections of the eye which are due to syphilitic diseases of the brain or other parts more or less intimately connected with the organs of vision.

The first class will therefore include:—

1. Affections of the eyelids.
2. Affections of the conjunctiva.
3. Affections of the cornea.
4. Affections of the sclerotic.
5. Affections of the iris.
6. Affections of the choroid.
7. Affections of the retina.

The second class includes:—

1. Optic neuritis, the result of lesions of the brain.
2. Atrophy of the optic nerves, consequent upon cerebral lesion, or upon disease of the bones.
3. Paralysis of the muscles of the eye and of accommodation.
4. Syphilitic lesions of the lachrymal apparatus (see p. 193).

1. **Syphilitic Affections of the Eyelids.**—The eyelids are occasionally the seat of primary and secondary syphilitic lesions. Gummatous growths are also sometimes found on these parts. Soft chancres on the eyelids are extremely rare, hard sores are somewhat more common; in the latter case the infection is usually conveyed by the lips of a person suffering from a syphilitic lesion of the mouth and throat. Hard chancres have been met with on the lids of newly-born children, and are undoubtedly the result of direct inoculation during parturition. The ulcer may occupy any part of either lid; it causes considerable swelling of the part, with congestion of the conjunctiva and a muco-purulent discharge. It is usually associated with induration of the glands in front of the ear, and of those under the chin.

Gummata sometimes occur in the eyelids. They form small roundish tumours, somewhat painful to the touch, and causing more or less inflammation of the eyelid. Such a growth may be mistaken for a hordeolum or a chalazion. Their tendency is towards disintegration and ulceration, which sometimes extends to the conjunctiva, causing considerable destruction of the tissues of the eyelids. In slighter cases the ulcers heal, and leave a small, white, depressed cicatrix, which is generally situated near the margin of the lid, giving it a notched appearance. More or less extensive destruction of the eyelashes is likely to result. Gummata have been seen in the lids as early as the sixth month after infection, and also at periods when all other traces of the disease have disappeared. The ulceration is generally accompanied by swelling and induration of the glands in the neck, and especially of those under the chin.

The tarsal cartilage sometimes becomes the seat of gummatous infiltration as a result of syphilis. The symptoms are thickening and infiltration of the cartilage, with great swelling of the eyelid. In two recorded cases of this affection, the eyelid attained the size of a small pigeon's egg. Glandular induration and other symptoms of syphilis were present at the same time. The affection is generally a chronic one, and yields but slowly to specific remedies.

2. **Syphilitic Affections of the Conjunctiva.**—These are less common than those of the lids, and are most frequently due to the extension of inflammation or ulceration from the latter parts. The conjunctival surface is, however, sometimes independently affected, and is the occasional seat of the initial lesion, and of secondary lesions, such as papules, pustules, and mucous patches. This part is also liable to be affected by gummatous growths.

A primary sore affecting the conjunctiva has been very seldom noticed, but a few well-authenticated cases have been placed on record. The ulcer causes considerable swelling and hardness of the affected lid, and is attended with induration of the preauricular glands. In the absence of such induration, the diagnosis may present considerable difficulty. In a case recorded by Mauthner, a hard swelling, as large as a bean, was found immediately under the conjunctiva of the lower lid. The patient was a girl, aged nineteen, apparently in perfect health. The surface of the tumour presented an irregularly shaped ulcer, covered with a very scanty secretion. There was no swelling of the neighbouring glands, but the case was set down as one of indurated chancre of the conjunctiva. The tumour was excised by another surgeon and found, on examination, to consist of "granulation-tissue." Recurrence took place and removal was again practised, when the eyeball was injured. So much mischief was set up that enucleation of the eyeball became necessary. There was no subsequent manifestation of any constitutional symptoms, and the nature of the case remained very obscure.

Cases of gummatous growths of the conjunctiva are rare; when present the lesions are generally situated on the ocular conjunctiva, near the margin of the cornea. They form small, yellowish, smooth nodules, not much raised above the surface of the conjunctiva, and without any sharply-defined border. These gummata are liable to ulcerate and break down. They have been sometimes found associated with gummata in other parts of the eye, and in various parts of the body. Malignant growths are sometimes found on the conjunctiva, and, like gummata, near the corneal margin. They, however, present a rough, nodulated surface, are usually sharply defined, and project above the level of the conjunctiva.

3. **Syphilitic Affections of the Cornea** most commonly occur in connection with the hereditary form of the disease.

Syphilis of the Cornea.—Affections of the cornea due to acquired syphilis were not recognised until comparatively recently. The cornea is affected late in the disease, and three varieties of syphilitic keratitis are described, together with gummatous degeneration.

(1) Interstitial or diffuse parenchymatous keratitis, which resembles the hereditary form. The deep layers of the cornea become cloudy, and this change is due to the existence of small opaque spots, which first appear at the centre of the cornea and extend towards the margin. Vessels appear to enter this cloudy mass from the periphery. Lachrymation and photophobia are not excessive unless iritis co-exists.

(2) Interstitial keratitis consists of ground glass patches of opacity, commencing at the circumference of the cornea. They are not very abruptly defined from the transparent portions, and the epithelial covering is not implicated. There is no sign of vascular proliferation. This *diffuse* keratitis is associated not only with iritis, but with gummatous ulcers of the skin and other parts.

(3) Keratitis punctata is characterised by the appearance in the substance of the cornea of circumscribed greyish or yellowish spots, some of them being as large as a pin's head. There is no zone of sclerotic congestion, and the portions of the cornea surrounding the spots are perfectly transparent. The patches are rapidly developed, and may rapidly disappear, either completely or partially; in the latter case leaving behind them small opaque points. The opacities never attain a large size, and never end in suppuration, nor is the iris ever involved.

The cornea may be affected with a gummatous infiltration, which commences at the circumference and extends inwards.

4. **Syphilis of the Sclerotic.**—Lesions originating in the sclerotic and due to syphilis are rare; but three conditions are described.

(1) Episcleritis consists of a patch or two of deep red or purplish injection of the eyeball, with thickening of the episcleral connective tissue and the superficial layers of the sclerotic, by which the overlying conjunctiva is raised over the affected part. The patches are usually placed near the ciliary region. Iritis is occasionally present.

(2) Parenchymatous scleritis is an extension of episcleritis to the deeper layers of the sclerotic. As there is more infiltration, the conjunctiva is more prominent. Pain is generally severe, and is frequently accompanied by a feeling of intraocular pressure. Iritis and cyclitis are rare complications. The affection runs a very chronic course, and leaves behind a blue-brown discoloration.

(3) Gumma of the sclerotic occurs as a circumscribed infiltration, projecting under the conjunctiva, and usually on the outer side of the eye. The conjunctiva is generally inflamed, but not involved. Pain and photophobia are, as a rule, present, together with some stiffness when the eyeball is moved.

5. **Syphilitic Iritis.**—Of all the structures of which the eye is composed, the iris is the one that is most frequently affected in syphilis. It would appear from statistics, that syphilis is the cause of more than one-half of the total number of cases of iritis, and that iritis constitutes from one-half to two-thirds of the eye-affections due to syphilis. It is further stated that iritis occurs in from five to six per cent. of all cases of syphilis.

When present, syphilitic iritis generally accompanies the early cutaneous eruptions, but it may appear at any stage of the disease. It is an occasional symptom of hereditary syphilis. It is probable that external influences, such as exposure to cold and damp, may assist in exciting an attack of iritis in syphilitic subjects. The affection has been known to supervene in a very severe form during mercurial treatment. As a general rule, one eye is first affected, and after a short interval, the other eye is attacked, but sometimes both eyes are affected at the same time. Relapses are somewhat frequent.

The iritis occurring during syphilis may be either plastic, serous, or gummatous; but the latter is the only variety absolutely due to syphilis, and the term "syphilitic iritis" should be restricted to this variety.

In plastic iritis the iris is swollen and discoloured, the pupil is small and reacts only very slightly or not at all to light. When atropine is used there will be irregularity of the pupil due to the presence of posterior synechiæ. There is marked ciliary injection, and turbidity of the aqueous humour. On the edge of the iris will be seen small exudations of plastic matter. Photophobia and pain are complained of.

In serous iritis, the ciliary injection is slightly marked; there is turbidity of the aqueous humour, with discoloured and sluggish pupil. On the back of Descemet's membrane are small grey-white masses showing as dots of opacity at the back of the cornea; they are frequently arranged in the form of a triangle with the apex opposite the pupil.

In gummatous iritis, which is the only form pathognomonic of acquired syphilis, there will be pain in the eye and around the orbit, which is generally worse at night. Vision is more or less impaired, and there is some amount of photophobia and chemosis. The symptoms, as a general rule, are somewhat slow in their development. On examining the eye, the iris is found to be dull and discoloured, its free edge is uneven and irregular, the pupil is contracted, more or less angular and drawn inwards and upwards, and perhaps adherent to the capsule of the lens.

Gummatous nodules are seen upon the surface of the iris. These nodules are usually single, but are sometimes multiple, and they vary in size from a small pin's head to that of a lentil. In exceptional cases they may attain a much larger size, and have been known to fill the anterior chamber and to protrude through the sclerotic. Their most frequent situation is close to the margin of the pupil and they give rise to posterior synechia; but they are sometimes found on the ciliary margin of the iris. The nodules are yellowish-red in colour, and vessels are sometimes seen to course over them; in other cases their surface is greyish-yellow, as if covered by a layer of pus. The larger nodules sometimes, though rarely, suppurate; they usually undergo absorption, their position on the iris being subsequently marked by spots of a lighter colour. Very large gummata may lead to atrophy of the eyeball, but such a result is extremely rare. Gummata sometimes occur on the ciliary processes, and involve the sclerotic coat, the choroid, and retina.

In addition to gummatous growths, a gelatinous exudation has been described as occurring in some cases of syphilitic iritis. This exudation is said to resemble in appearance a cysticercus-vesicle, it is furnished with a greyish-blue thin wall; and it appears to start from the margin of the pupil, being apparently connected with the anterior capsule. The exudation is rapidly poured out, but usually disappears in a few days when treated.

The progress of syphilitic iritis resembles that of other forms of inflammation of the iris. The symptoms are sometimes of an acute character, hyperæmia and severe supra-orbital pain, with evening exacerbations lasting till midnight, being the most prominent features. A decided attack of this character, in a patient suffering from this affection, often depends on an increase of inflammation and the development of fresh adhesions. In such cases, the pupil previously dilated by atropine is again contracted, and the aqueous humour loses its transparency. After a course of several weeks, during which exacerbations frequently occur, the symptoms gradually subside, the pupil regains its normal size, the pains abate, and vision becomes clearer. Recovery, however, is often imperfect, and relapses are not infrequent.

In other cases the symptoms are less severe from the first, and the complaint pursues a very tedious course. The patients suffer but little, and are only aware that their vision is becoming less and less distinct, and that their eyes soon become red and sore on exposure to cold winds. On examination, the pupil is found to be much contracted or even closed, and the iris discoloured and prominent. The prognosis in such cases is very unfavourable. It frequently happens that the process appears to terminate and temporary improvement takes place; but relapses occur under the influence of any source of irritation, fresh adhesions are formed and the pupil becomes closed, or exclusion takes place.

The inflammation, in unfavourable cases, is not confined to the iris. The choroid and the ciliary body are apt to become implicated, and the condition may end in glaucoma. *Choroiditis* is characterised by the appearance in the vitreous body of fine dust-like particles, which tend to unite and form flocculi. The retina becomes greyish and cloudy, and variegated by patches of effusion and dark-coloured deposits. Atrophy of the retina often results.

Cyclitis more commonly follows the chronic form of iritis. It is characterised by severe ciliary neuralgia, much aggravated on touching the eye; rapid impairment of vision; diminished tension of the eyeball; sometimes by hypopyon, retraction of the ciliary portion of the iris, and finally by complete disorganisation with bulging forward of portions of the iris, as a result of accumulation of fluid behind that membrane. Diffuse retinitis is another occasional complication of syphilitic iritis.

In favourable cases, the iritis runs its course in from two to three weeks. All the symptoms then subside; the pupil regains its power of movement, vision is restored, and the iris resumes its normal appearance. Slight adhesions sometimes remain between the pupillary margin and the capsule of the lens, or the uveal surface becomes adherent at one or more points. This latter condition does not much affect the movements of the pupil. In unfavourable cases the results are often very serious as regards the function of the eye. More or less atrophy of the tissue of the iris; extensive posterior synechiæ; complete adhesion of the pupillary margin to the lens, forming what is called "exclusion" of the pupil; and distension of the eyeball, are occasional consequences of severe syphilitic iritis. If distension of the eyeball occurs it causes obstruction to the circulation, the vitreous humour being reduced to a liquid condition, and degeneration of the retina and atrophy of all the structures of the eye will result, a total loss of vision being the consequence. If only one eye be thus affected, sympathetic disturbances may be set up in the other eye, unless enucleation be adopted.

The *prognosis* in syphilitic iritis is, on the whole, unfavourable, but it depends a good deal upon the general condition and the state of the eye. The acute affection, however, if promptly treated, often subsides without leaving any serious consequences. The chronic form, especially if attended with complications, very rarely terminates in complete recovery. As a general rule, the iritis which accompanies the exanthematous syphilides is of a more acute character than that which occurs at a later period.

Treatment of Syphilitic Iritis.—Active measures are generally necessary; mercury should be administered and the patient should be brought under its influence as speedily as possible. Two or three grains of blue pill may be given three times a day, and if it acts upon the bowels one-sixth of a grain of opium may be added to each dose. As soon as any constitutional effects are manifested the pills should be given less frequently. The good effects of the remedy are shown by the disappearance of the adhesions and deposits. The eye, of course, should be protected from all sources of irritation. The patient should remain in a well-ventilated and darkened room; he should wear a shade, and should abstain from using the eye in any way. In cases where photophobia is marked, the use of spectrum blue glasses should be advocated, as they neutralise the red rays which often produce so much discomfort in these cases. The pupil must be kept thoroughly dilated by means of atropine. Two or three drops of the solution of the sulphate should be applied to the eye several times a day, and this should be continued so long as any sign of inflammation remains. It sometimes happens that atropine will set up a conjunctivitis, accompanied by œdema of the eyelids; should this occur, duboisin, hyoscyamine, or homatropine must be substituted. If the pain is very severe, the conjunctiva congested, and the superficial parts about the eye hot and throbbing, four or five leeches may be applied to the temples or around the margin of the orbit; and it is a good plan, under these circumstances, to add a little cocaine to the mydriatic, say gr. ij. to the drachm. If the pain is of a neuralgic character and follows the course of some of the branches of the fifth nerve, it will be well to have recourse to hypodermic injections of morphia. The improved condition of the eye after a good night's rest will be evidence of the beneficial effects of this remedy. When the symptoms have subsided, and the patient leaves his room, all sources of irritation, such as exposure to strong light, variations of temperature, cold winds, etc., *must be carefully avoided.*

When adhesions remain, the use of atropine and mercury must be continued for some time in the hope that absorption may take place. If no change is produced and the adhesions continue, a fresh attack of iritis is likely to supervene and to induce still more serious changes within the eyeball. Under these circumstances, a full trial having been made of mercury and atropine, the question of iridectomy will have to be considered. The operation is advisable in cases of repeated recurrence of inflammation, and when extensive synechiæ exist. It should be performed at a time when the inflammatory process is in abeyance. After its performance it rarely happens that iritis recurs. Another operation has been proposed, viz., to make a small incision into the cornea, and to separate the adhesions by means of a hook or forceps introduced into the anterior chamber. In cases in which the adhesions are only slight, the alternate use of eserine and atropine, as local applications, has been recommended. These two substances are directly antagonistic to each other in their action on the eye, and the alternate contraction and dilatation of the pupil tend to separate the adherent parts. In advanced cases, when the structures of the eye have become disorganised, enucleation may become necessary in order to save the other eye.

6. **Syphilitic Affections of the Choroid.**—Syphilitic choroiditis not infrequently accompanies severe inflammation of the iris, due to the same cause; the anterior portions of the choroid being implicated in such cases. The choroid may also be affected independently, the lesion manifesting itself either in the anterior or in the posterior part of the membrane. One eye is usually attacked; but sometimes both are affected at the same time. Syphilitic choroiditis presents no symptom indicative of any specific origin; the co-existence of syphilitic lesions elsewhere will assist the diagnosis, it being remembered that the majority of cases of choroiditis occur in syphilitic subjects.

When choroiditis supervenes upon an attack of iritis all the symptoms become much aggravated; the power of vision is much diminished, pain becomes more intense, the vitreous humour looks cloudy, tension of the eyeball is lessened (owing to implication of the ciliary body); the patient complains of flashes or sparks before the eye, and there is sometimes effusion of blood into the anterior chamber. If the case is neglected the results may be destruction of the choroid and retina, atrophy of the iris and of the ciliary body, the formation of cataract, separation of the retina from the choroid, and total loss of vision.

The *treatment* is the same as that of syphilitic iritis, but mercury is still more strongly indicated. In the later stages, when the active symptoms have subsided, iodide of potassium may be given with benefit.

The anterior portion of the choroid may be affected independently of iritis, or the latter may be followed by an attack of choroiditis. The principal symptom is diffuse cloudiness of the vitreous humour, sometimes to such an extent that vision is all but lost. The haziness is probably situated in the anterior part of the vitreous. The pupil is dilated, and there is severe pain accompanied by increased tension of the eyeball, the case simulating one of glaucoma; but there are no other very marked symptoms. The treatment is the same as that of iritis. Under the influence of mercury, the haziness clears up and power of vision is rapidly restored.

When the inflammation mainly affects the posterior portion of the choroid, the condition has been termed *choroiditis exudativa*, though opinions differ as to whether there is any exudation present, or whether the symptoms are due to hyperæmia with subsequent atrophy, or to the latter change with or without new pigment-formation. The appearances visible on direct and ophthalmoscopic examination are somewhat variable. Four different forms have been described: 1. Superficial red or yellowish spots, occupying the periphery of the visible portion, and soon becoming atrophied and converted into shining white spots, which are more or less surrounded by a circle of pigment. 2. More extensive, sharply defined spots occupying the centre of the fundus of the eye, bluish-white or yellowish in colour with aggregations of pigment, and causing great diminution of the power of vision. 3. A more diffuse exudation in the fundus, especially over the macula lutea, but extending towards the periphery, of a brilliant white colour, and causing almost total blindness. This form has been supposed to be especially characteristic of syphilis. 4. Uniform atrophy of the choroid, extending over a greater or less extent of the fundus of the eye and advancing concentrically towards the centre of the retina, and accompanied by the formation of irregular masses of pigment. In all these forms there is usually more or less extensive and complete atrophy of the superficial pigment, or in consequence of inflammatory metamorphosis, the cells coalesce and form black patches or flakes. These latter, associated with superficial atrophy of the pigment cells, are sometimes the only pathological appearance.

Haziness of the vitreous humour is the most frequent appearance in all forms of choroiditis. The haziness is seldom diffuse, but appears to be due to the presence of flakes or shreds or patches of a greyish or white tint. Sometimes these are fixed, and sometimes they appear to float freely about.

The course of syphilitic choroiditis is usually chronic; it may last for some months, improvements alternating with aggravations of the symptoms. In unfavourable cases the morbid process extends to the retina and optic nerve, or cataract may become developed. If the macula lutea is involved, central vision will probably be permanently lost; the invasion of this region is noted by the appearance of a central scotoma in the field of vision. The *prognosis* under suitable treatment is, however, favourable. The most unfavourable cases are necessarily those in which there is considerable exudation in the fundus oculi, in the neighbourhood of the macula lutea. The retina is always involved in posterior choroiditis. Mercury is the remedy to be relied upon, under its use the vitreous humour regains its transparency, and the flakes and patches become absorbed. The patient must, of course, be kept in a darkened room, and strictly prohibited from using the eye.

Gummata are never met with in the choroid alone, but a gumma of the ciliary body may extend posteriorly into the choroid.

7. **Syphilitic Retinitis** is a much less frequent affection than syphilitic iritis, and occurs in a later stage of the constitutional affection. Statistics show that it is found in from 3 to 4 per 1,000 of all cases of syphilis. It is generally associated with changes in the choroid and opacities in the vitreous humour.

The disease generally occurs during from six to eighteen months after contracting the disease. One eye is usually first attacked; but in the absence of proper treatment, the second eye, sooner or later, becomes involved.

The changes in the retina may be conveniently divided into five varieties:—

(1) *Choroido-retinitis.*—In this variety, the retinitis is secondary to the choroiditis present, and, as before noted, is a constant attendant of posterior choroiditis, being accompanied by the signs of that disease. The existence of the inflammatory process involving the retina is confirmed by the presence of scotomata and diminution of central and peripheral vision, together with distortion of the image.

(2) *Simple retinitis.*—Involvement of the retina alone is rather rare. With the ophthalmoscope, we find that the fundus is cloudy and blurred, this mistiness disappears as the equator is reached. The papilla is hazy and surrounded by a belt of cloudiness, which frequently extends in streaks along the blood-vessels.

The veins are engorged and tortuous. The vitreous is clear.

Subjectively, we have diminution of central vision more or less marked, muscæ volitantes, and night blindness.

The *prognosis* of simple syphilitic retinitis is generally favourable if promptly treated, but relapses are frequent. Occasionally, however, treatment fails, and atrophy of the retina, choroid, and optic nerve supervenes.

(3) *Exudative retinitis.*—In this variety of retinitis, the inner layers of the retina are affected by a yellow exudation in the form of scattered patches.

(4) *Hæmorrhagic retinitis* may occur as a consequence of endarteritis, but is rather rare. It resembles hæmorrhagic retinitis caused by other diseases.

(5) *Central recurring retinitis*, of von Graefe, is very rare indeed. There is an opacity in the region of the macula lutea, and small white dots in the macula itself. These signs appear suddenly, disappear again in a few days, but soon recur. Later on white streaks appear, radiating from the papilla along the course of the blood-vessels, and small white dots, like those first seen in the macula, are more or less scattered over the fundus. The impairment of vision is considerable, and may become permanent. Recovery, however, is the rule under mercurial treatment.

The *treatment* consists in the administration of mercury; and if no good effects are produced, iodide of potassium may be tried. The patient must be forbidden to use the eye; he should be kept in a darkened room, and wear dark spectacles or a shade.

Retinitis pigmentosa (pigmentary degeneration of the retina) has been regarded as due to syphilitic infection; but it is not improbable that the changes described as those of pigmentary retinitis are really due to severe choroiditis, ending in proliferation and irregular deposit of pigment.

The affections of the eye due to syphilitic lesions external to the eyeball remain now to be described. These extraocular lesions may be divided into three classes: 1. Gummatous growths in any portion of the brain or its membranes. 2. Gummatous growths at the base of the skull involving the optic tract, commissure, or nerves. 3. Independent syphilitic inflammation of the intracranial portion of the optic nerve. The morbid appearances these conditions give rise to, which are visible within the eye, are swelling of the optic papilla (or optic neuritis), descending neuritis, and atrophy of the optic nerve, the result of one of the two former lesions.

Optic Neuritis.—This is a frequent accompaniment of cerebral tumours, and especially of gummatous growths situated at the base of the brain, which involve the optic tract, the commissure, or the optic nerves themselves. There is, however, nothing characteristic of syphilis in the ophthalmoscopic appearances, which consist mainly of swelling and prominence of the optic papilla, with more or less tortuosity and stasis of the retinal veins. The condition has been supposed to be due to œdema of the connective tissue which unites the nerve-fibres. It may exist in a very pronounced degree without affecting vision, but this is by no means usual. The central vision is first affected, whence the loss extends to the periphery; its presence in any given case is strongly indicative of a cerebral tumour. In descending neuritis, the papilla is not so œdematous; there is no stasis of the veins, but the retina is involved to a further extent, often giving rise to hæmorrhages and patches of exudation. Peripheral vision is usually first affected, and the change gradually extends to the centre. In all cases of suspected cerebral syphilis the eyes should be very carefully examined. Bilateral papillitis is caused by increased intracranial tension, which may be due to a gumma situated centrally. Unilateral papillitis may be due to a lesion in the orbit. Bilateral descending neuritis indicates a lesion of the optic tract between the chiasm and occipital lobe, whilst unilateral descending neuritis would point to a lesion between the chiasm and the papilla. The existence of optic neuritis will supply an important indication for treatment, which consists in the careful and persistent administration of mercury. Relapses may be expected to occur, and atrophy of the optic nerve is a not infrequent result in cases in which the other cerebral symptoms disappear, or remain in abeyance for some time.

The intracranial portion of the optic nerve is sometimes the seat of syphilitic inflammation. The symptoms and ophthalmoscopic appearances are those of optic retinitis, viz., swelling of the optic papilla, contraction of the field of vision, and diminished visual power. In a few fatal cases that have been placed on record, the post-mortem examination showed considerable thickening of the optic nerve, extending from the optic foramen to the commissure. This swelling was due to the presence of an immense number of small round and oval cells, deposited between the fasciculi, many of them being in a state of fatty degeneration. In other cases the nerve has been found reduced to a pulpy mass consisting of the remains of nerve-fibres, granules, lymphoid cells, and amyloid bodies. Induration of the nerve has been also found. It is evident that these different conditions will induce very varying kinds and degrees of visual disorders.

The following case of syphilitic lesion of the optic nerves under my care illustrates this condition. The patient had contracted syphilis when twenty-one years of age. Six weeks after infection roseola appeared, and at the same time several large *rupial* spots were developed on the chest, arms, and legs. He was treated by the late Mr. Skey with his favourite remedies, viz., the iodide of potassium and bark. The rupia soon disappeared, but the roseola remained for some time, and then slowly subsided. For twenty years afterwards the patient remained quite free from any further symptoms. Three years after the infection he married, and had eight perfectly healthy children. He spent most of his time in the country, leading a healthy, temperate life. At the end of the twenty years, whilst on board ship, he was suddenly seized with diplopia. He consulted an oculist abroad, who prescribed galvanism. On his return to England he came to me complaining of a nasty taste in his mouth. I found a large ulcer, presumably syphilitic, at the upper part of the posterior wall of the pharynx. He mentioned his eye-affection, and I took him to the late Mr. Critchett, who found considerable impairment of visual power, and diminution of the field of vision. Mercury and iodide of potassium were administered for three months, but without avail, and many leading ophthalmologists were consulted. Mr. Critchett sent the patient to Prof. Donders, by whose advice treatment with mercury and the iodide was pushed still further, but the patient's vision grew worse and worse, and his general condition was much impaired. Total blindness speedily supervened, and he died within a year from the appearance of the symptoms. On post-mortem examination the optic commissure was found to be softened, but there was no gummatous or other lesion in the brain.

Atrophy of the Optic Nerve in syphilitic cases may be either primary, secondary, or consecutive. Primary atrophy is met with in syphilitic locomotor ataxy, and other syphilitic spinal affections. Secondary atrophy may be due to a gumma or exostosis affecting some part of the optic nerve or tract. Consecutive atrophy is the result of either papillitis or descending neuritis. It may become developed in the absence of any other cerebral symptoms; but it is sometimes associated with violent and persistent headache, hemiplegia, and paralysis of the third nerve. If these latter symptoms are present, the syphilitic nature of the eye-affection is strongly indicated. It is important to determine the true cause of the disease, inasmuch as atrophy of the optic nerve due to non-syphilitic causes would be made worse by mercurial treatment. The syphilitic affection occurs in young subjects, in whom atrophy of the optic nerve due to other causes is very rare. The symptoms are—contraction of the field of vision, with much diminished visual power, and impaired colour-vision; whilst objectively the optic nerve assumes a bluish-white colour, the arteries being small and indistinct.

The treatment consists in the careful administration of mercury, which may be followed by iodide of potassium. If neither of these remedies produces any good result, little benefit can be expected from treatment. Hypodermic injections of strychnia may, however, prove of service, and should be tried after failure of the above-mentioned remedies. The continuous voltaic current has been tried in a few cases with the effect of some restoration of vision.

Paralysis of the Muscles of the Eye may be due to a syphilitic lesion affecting either the motor nerves in some part of their course or their nuclei.

When the nerve is involved, the lesion is generally due to gummata of the dura mater of the base of the brain, involving the nerve-trunk either secondarily, or by pressure. The third, fourth, and sixth nerves are, from their intimate relation with the dura, very apt to become implicated.

If a syphilitic lesion involves either the pons, corpora quadrigemina, cerebral peduncles, or cerebellum, paralyses of the ocular muscles may occur, but are not frequent. They may also occur secondarily, from patches of softening due to a syphilitic endarteritis, or from extension of a meningeal infiltration. An ossifying or gummatous meningitis in the region of the sella turcica is almost certain to involve the optic foramen.

The symptoms vary according to the seat of the lesion and the nerve or nerves implicated. When one or more of the ocular muscles are paralysed, double vision is a marked symptom. When the paralysis attacks the third nerve which supplies the levator palpebræ, the sphincter of the pupil, the ciliary muscle, and all the external muscles of the eye, excepting the external rectus and the superior oblique, we find the upper lid falls, the pupil is dilated, and the eye looks outward. When the sixth nerve is attacked the eye is turned inwards, and there is double vision of all objects on the outer but not on the inner side. Sometimes separate branches of the third nerve are paralysed, and all these paralyses are not infrequently accompanied by retinitis, choroiditis, and iritis, and if the cause of the paralysis is a tumour in the orbit, exophthalmos will be present. The co-existence of any of these symptoms is strongly indicative of a syphilitic origin of the paralysis. Either one or both eyes may be affected. Most cases of oculo-motor paralysis are limited to a branch of the third nerve, and if in addition to this there is present optic neuritis, or atrophy of the optic nerve, it points to the existence of an intracranial lesion.

Treatment.—As in the case of the lesions previously described, mercury and iodide of potassium are the remedies to be relied upon. The latter must be given in full doses if there are evidences of periostitis of the orbit. If the symptoms point to intracranial disease—*e.g.*, gummatous tumour of the brain or meninges—a prolonged mercurial course is especially indicated. Experience has shown that even very severe structural changes may be repaired under proper treatment. Further details on this subject will be found in the chapter on "Syphilitic Affections of the Nervous System."

There remain for notice a few symptoms connected with the eyes, and dependent upon syphilitic cerebral lesions, but in which there are no marked ophthalmoscopic appearances. Amblyopia and even amaurosis sometimes occur in cases of cerebral syphilis, in which nothing particularly abnormal is seen in the fundus of the eye. In these instances it may be supposed that the symptoms are due to ischæmia, the result of syphilitic disease of the vessels of the anterior part of the brain. The calibre of these vessels being reduced, the nutrition of the optic nerve is injuriously affected, and its functional capacity is considerably impaired. The symptoms are for the most part transitory, and relapses alternating with improvements are often noticed. The amblyopia sometimes takes the form of hemianopia. It must not, however, be inferred that all cases of syphilitic amaurosis without ophthalmoscopic signs are due merely to ischæmia. Such signs may be very slight, if not altogether wanting, in cases of total blindness, the result of gummatous tumours affecting the commissure of the optic nerves, or due to intracranial neuritis.

CHAPTER XIX.

SYPHILITIC AFFECTIONS OF THE EAR.

The manifestations of syphilis can sometimes be observed in the organ of hearing, and each of its three divisions is liable to be affected.

The External Ear.—Primary sores are not infrequently seen on the external ear, the virus having been communicated from the tongue or lips of a person suffering from primary or secondary lesions of these parts. The external ear is likewise occasionally the seat of various secondary eruptions, differing, however, in no respect from those appearing elsewhere. Mucous patches, sometimes with soft and fungous granulations, are occasionally found in the external meatus, and covering the membrana tympani. These cause deafness and are the source of more or less discharge. When persons suffering from perforation of the membrana tympani contract syphilis, it has sometimes been noticed that the purulent discharge from the ear, impregnated with the syphilitic virus, has caused the development of mucous papules. Ulcerations due to syphilis have also been observed; some at or near the entrance to the meatus; others more deeply seated, sometimes involving the membrana tympani and causing perforation of that structure. Exostoses of the bony canal are occasionally seen in syphilitic patients; their growth is very slow, and they do not cause pain; but they obstruct the canal to a greater or less extent. It is most probable that they are not due to syphilis, as they are found in patients without any specific taint. Gummatous growths are of rare occurrence in the structures of the external ear.

The Middle Ear.—The tympanum, or middle ear, is the part of the organ most frequently affected, owing to the extension of syphilitic lesions from the throat and nose. Simple catarrh of the middle ear is frequently found in syphilis, and exactly simulates the same disease in healthy persons, save that whereas the latter usually yields promptly to local treatment, the former requires in addition the exhibition of mercury for its removal. Catarrh of the middle ear is due to extension of the inflammatory symptoms present in the throat during the early secondary stage. The Eustachian tube is closed, and subjectively there will be dulness of hearing, tinnitus, and râles upon inflating the tympanum. In severer cases, there will be congestion of the upper posterior part of the membrana tympani, or of even the entire surface, and occasionally the amount of fluid in the middle ear will cause bulging of the tympanic membrane. In the simpler forms of the disease, the tympanum must be inflated and mercury given if this has not already been done. The severer cases may resolve under treatment, or may terminate either in chronicity or suppuration.

Suppurative inflammation of the middle ear may be the direct result of extension of syphilitic lesions from the naso-pharynx, and exactly simulates purulent median otitis from other causes, but more extensive caries is often present, and suppurative mastoiditis is a frequent complication. In treating these cases it is necessary to bear in mind the syphilitic element; but the local treatment of the disease is equally important. Thorough asepsis of the ear should be aimed at, otherwise we shall probably have the meatus more or less blocked up with condylomata, which, by preventing the escape of the discharges, may jeopardise the life of the patient. The ear should be thoroughly syringed or douched out three or four times a day with a weak solution of perchloride of mercury (1–5,000). After each washing, the meatus should be thoroughly dried and a little iodoform blown in. If the suppuration extends to the mastoid cells, they should be opened and drained. Careful and prolonged treatment is necessary in these cases, and the prognosis as regards restoration of hearing power is not very favourable. When complicated with mastoid disease and caries, life itself may be threatened.

Chronic catarrh of the middle ear may result from the two former conditions; or may come on gradually, without being preceded by one of them. It cannot be distinguished from a similar condition occurring in non-syphilitic subjects, and is not very amenable to treatment. When seen early, anti-syphilitic remedies should be energetically employed. Local treatment to the naso-pharynx and Eustachian tube must be used as an adjuvant; but the prognosis is not, as a rule, very favourable, the deafness becoming gradually worse and worse. Still, a certain number do improve, and this fact must encourage us to persevere with energetic treatment.

THE INTERNAL EAR.—The labyrinth is not infrequently the seat of syphilitic changes. The symptoms are:—

1. Tinnitus. The subjective noises are generally very high pitched.
2. Deafness. May be slight at first, but rapidly

increases for watch, voice, and tuning-fork. Bone-conduction diminished from the very commencement.

3. Auditory vertigo, probably due to labyrinthine pressure.
4. Pain. Occasionally present and deep seated.

The onset of syphilitic labyrinthine disease is frequently very rapid, and the deafness soon becomes very pronounced.

The labyrinth may be involved secondarily to disease of the middle ear; and in this case the symptoms just described will supervene on the ordinary tympanic ones.

The *treatment* must be general; mercury, either alone, or with iodide of potassium, must be pushed until the system is thoroughly under the influence of the remedies, or until some amelioration of the symptoms is produced; but it must be admitted that, except in quite recent cases, a large amount of improvement cannot be looked for.

CHAPTER XX.

SYPHILITIC AFFECTIONS OF THE NERVOUS SYSTEM.

THE connection between syphilis and many disorders of the nervous system has been recognised for a considerable period, but it is only in modern times that the nature of the lesions has been satisfactorily demonstrated. Syphilis has been clearly shown to affect the central nervous system in four different ways. In the first place, it affects the bones and the membranes, producing exostoses, thickenings, and gummatous deposits, which, according to their position and extent, more or less interfere with, or damage, portions of the brain itself or nerves proceeding from it. Secondly, syphilis gives rise to thickening and occlusion of the vessels which supply the brain with blood, and consequently to disturbance of nutrition of the nervous substance, and to further serious changes. Thirdly, the most characteristic lesions of syphilis, viz., gummata, are found in the interstitial tissue of the nerve-centres, where they give rise to symptoms of various kinds, but generally of a marked character. Fourthly, degenerations of a chronic nature, affecting the central nervous system, are found so frequently in the subjects of syphilis, that they are almost beyond a doubt due, at least partly, to this cause.

The peripheral nerves are affected by gummata developing in the connective tissue sheaths, as well as by the pressure of gummatous tumours, syphilitic meningitis, or exostoses. Examples of this kind are seen in the orbit, and have been already referred to (see p. 283).

With regard to the stage of the disease with which nervous disorders are most commonly associated, it was formerly believed that they invariably occurred at a late period, and they were therefore classified among the so-called "tertiary" symptoms. Careful and extended investigations have, however, clearly shown that disorders of the nervous system may occur at a very early period of constitutional syphilis, and at any subsequent time. Cases occur during the first year after infection, and a few instances have been placed on record in which the interval was less than six months.

In these latter, the symptoms are for the most part due to syphilitic lesions of the cerebral arteries rather than to gummatous or bony new formations. Allusion has already been made (see p. 30) to the frequency, observed by the author, with which *early rupial ulceration* is followed by the speedy development of *cerebral* symptoms. It appears likely that the syphilitic virus *per se* can produce nervous diseases, but it is probable that in many cases other causes co-operate, and may, so to speak, give a direction to the action of the poison. Among these may be mentioned, excesses, sexual and otherwise; abuse of alcohol; oft-repeated mental and bodily over-exertion; exposure to cold, and other injurious influences; together with hereditary predisposition to nervous disorders.

We believe that cases of disease of the nervous system due to syphilis are becoming more numerous, and that this increase is due not so much to the increase of syphilis, as to its frequent association with other potent factors in the causation of nervous diseases—to wit, excessive mental work and bodily fatigue, alcoholic, and other excesses.

Another powerful factor, and one which has not yet been sufficiently recognised, is futile or improper treatment during the early stages of the constitutional malady. This cause is so frequently seen in cases of syphilis affecting the nervous system that no opportunity should be lost of impressing the fact most thoroughly upon our patients, knowing how prone many of them are to give up treatment as soon as the prominent secondary manifestations of the disease have subsided. We find that syphilis is peculiarly apt to develop also in those cases where, although the primary stage of the disease has been well marked, secondary symptoms have not been strongly developed; but these again belong to the class of cases where it is most difficult to impress upon our patients the propriety of prolonged treatment.

Syphilis of the Brain and its Meninges.—The peculiar liability of the cranial bones to be attacked by syphilitic inflammation has been alluded to in a previous chapter, and it often happens that the development of these lesions produces more or less serious disturbance of the functions of the brain, as a result of pressure on some portion of its surface or on the nerves proceeding from it. Thus, an exostosis situated close to the stylo-mastoid foramen, or in the internal auditory meatus, may cause paralysis of the facial and auditory nerves respectively, and in like manner a similar growth on the body of the sphenoid may so compress the optic commissure as to produce total blindness. With regard, also, to the cerebrum itself, numerous cases have occurred in which exostoses of the vitreous table of the skull, and thickenings of the dura mater, have induced marked cerebral symptoms, such as intense headache, obstinate vomiting, giddiness, tremors, loss of sensation, hemiplegia, and convulsions of an epileptiform character. Other affections of the bones, of a more acute and destructive kind, such as suppurative periostitis, necrosis, etc., may give rise to similar symptoms, as well as to those of meningitis and cerebral abscess. Owing to this obvious dependence of many nervous affections upon syphilitic lesions of the bones, the earlier authors believed that the latter were the exclusive cause of the former, which they regarded as always associated with the tertiary stages of the disease. More careful observations, however, demonstrated the fact, already referred to, that nervous affections occur also in the early stages of syphilis, and in patients who show no signs of any bony lesion.

Gummata may develop in connection with the dura mater and the pia mater; they vary from a small shot to a hen's egg in size, and may cause damage either by pressure or by direct implication of the surrounding nerve tissue. Gummata of the dura mater are generally firmer than those springing from the pia mater, and the symptoms they give rise to are generally due to pressure, as the cerebral substance itself is rarely affected by this form of growth.

Gummata springing from the pia mater are of more frequent occurrence than the former. They may develop either on the surface of the pia mater or from a fold of the membrane between the convolutions, or from one of the processes which extend into the ventricles.

Gummata probably never arise in the cerebral substance itself, but only extend into it secondarily from the surrounding tissues.

The symptoms of gummata of the meninges must vary very considerably according to the size and seat of the lesion. Pain in the head is one of the most constant symptoms; this may be very acute and severe, or dull with a sense of intracranial pressure. The pain may be constant or paroxysmal, and is often more marked at night. Vertigo is frequent, together with delirium and insomnia.

As the lesion develops, the symptoms increase, paralysis and other signs being manifested, the extent of which must vary with the region implicated and with the size of the growth.

There may be hemiplegia; or if the cortical motor regions are involved, the paralysis may be limited to a limb or to a group of muscles; both sides may be paralysed when there is bilateral disease, or where both the motor tracts are involved.

Sensation may be affected in various ways, and the nerves of special sense may be involved.

The onset of paralysis due to gummata is, as a rule, gradual; and the effects are principally those produced by the pressure of the growth.

Convulsions are common when the cortex is affected by the growth, or by a meningitis extending from the growth and involving the motor centres. The convulsions usually begin in the hand, face, or foot, and spread from this centre, loss of consciousness supervening late in the attack.

Optic neuritis is frequently present, and is generally developed secondary in point of time to the other symptoms. Excitement or depression is commonly associated with gummata. Gummata of the meninges are frequently multiple and are probably associated, as a rule, with meningitis.

The gummatous tumours have been minutely described by Virchow, Charcot, and Cornil. On section the surface presents two zones; the outer one is pinkish and semi-transparent, and occupies the smaller portion of the growth; the inner or central portion is opaque, yellow or grey, dry and hard. The transition from the normal brain-substance into the growth, and from the periphery of the latter into its central portion is, in both cases, gradual. The surface of the tumour sometimes projects; at other times, owing to atrophy of its centre, it is depressed. The growth itself forms a consistent mass, harder and more solid than the surrounding substance. It consists of a fine stroma with numerous round cells; later on spindle-shaped cells appear. The blood-vessels are covered by these cells, and their calibre towards the centre of the growth becomes obliterated by an endarteritis. In the central portion of the growth, very few nerve-fibres can be demonstrated, and the appearances are those of caseous or of granular degeneration. Fat-crystals are also discoverable. The accumulation of the cells and the compression of the vessels produce a general atrophy of the central portion of the tumour. It seems probable that in the brain, as in other organs, the gummata may undergo a process of softening and absorption, leaving behind them either a cicatrix or a small cyst surrounded by cerebral substance, which is more or less softened and inflamed. Such conditions, however, are more generally due to endarteritis.

The smaller gummata are situated in the tissue of the pia mater, and are generally to be found in connection with the arteries at the base, and the posterior and middle cerebral arteries. They form small greyish-yellow nodules, some of them as large as a small bean. They cause compression of the vessels, and more or less penetrate and mingle with the adjacent grey matter. They set up chronic arteritis, with all its consequences, viz., thickening of the coats, thrombosis, and obliteration of the calibre of the vessel, with softening of the cerebral substance as a final result. Fibrous thickening of the vessels is another secondary change. It therefore appears that arteritis may either be the consequence of gummatous formations, or, still more frequently, it may be separately induced. In a few cases gummata are found in one portion of the brain, while signs of arteritis exist in another, the two processes going on independently of each other.

There is seldom much difficulty in distinguishing gummatous formations in the brain. Tubercular growths are the only ones which closely resemble them. The former are, however, generally single, and more regular in form; they do not send prolongations into the neighbouring cerebral tissue. Like gummata, they present a cortical and a medullary portion, but the latter is always more marked and extensive than the corresponding portion of a gumma, and the circumference is sometimes dotted over with minute miliary tubercles, semi-transparent and easily recognisable. Complete obliteration of vessels is more common in connection with tubercle than with gummata. A tuberculous growth is sometimes surrounded by a loose layer of connective tissue; a gummatous growth passes gradually into the healthy brain-substance. When the post-mortem appearances are of an uncertain character, the clinical history of the case will generally aid the diagnosis. Patches of sclerosis more or less resemble gummata in process of transformation, but they are distinguishable therefrom by the fact that they present no differences between the centre and circumference, and do not undergo cheesy metamorphosis. Gliomata do not form circumscribed tumours; they present a well-marked reticulated appearance. Their consistence varies from that of healthy brain-substance to that of medullary cancer. On section the cut surface usually shows a number of vessels. The tissue is soft and uniform, and very vascular throughout its substance.

Meningitis.—This may be secondary to the extension of the inflammation from caries of the adjacent bone, or an adjacent gumma. When primary, the dura mater may be affected with a hyperplastic inflammation, which is diffuse and apt to undergo fibroid change. This pachymeningitis is not so common in the acquired as in the inherited form of the disease.

The membranes of the brain may be affected at an early stage, and quite independently of any change in the bones. Paralyses of various kinds have been observed to occur with the earliest symptoms of constitutional syphilis, and to subside rapidly under antisyphilitic treatment. The paralysis may implicate certain nerve-trunks, or one or more limbs, motion being more affected than sensation. Mental disorder is not very uncommon, but the nerves of special sense are rarely affected. In some cases the symptoms supervene very rapidly; headache is usually complained of, and this may be followed by such symptoms as hemiplegia, associated with rigidity of the arm and leg, aphasia, paralysis of the motor oculi and other cranial nerves, loss of power over the sphincter ani, retention of urine, etc. The violence of the attack distinguishes these symptoms from those which are apt to occur in the later stages of syphilis.

With regard to the pathological condition to which these symptoms are due, it may be assumed that it consists in more or less acute inflammation of the pia mater and arachnoid, or in certain vascular changes, to be presently described. The early syphilitic eruptions develop themselves with great rapidity, and the same peculiarity is observable in the setting-in of syphilitic iritis; and it may be supposed that the pia mater, in the cases under discussion, is the seat of inflammatory changes attended with the formation of deposits and adhesions. Thickenings of the membranes at the base of the brain have been observed in fatal cases of early cerebral disease, the result of syphilis. In a case of chronic meningitis, the symptoms of which—viz., hemiplegia and marked imbecility—appeared six mouths after infection, the pia mater was found to be strongly adherent to the convolutions over the entire surface of the brain, while the arachnoid over the convexity of the hemispheres was considerably thickened, and almost of the consistence of felt.

Circumscribed inflammation of the pia mater would appear also to be the pathological condition to which syphilitic epilepsy is frequently due. Irritation of the cortical substance of the brain is caused by the adhesions of the membranes and the pressure exercised by the thickened portions. The same morbid conditions may likewise give rise to symptoms resembling in some respects progressive paralysis of the insane. Small nodular growths, some confluent, others isolated, are sometimes found in the pia mater and arachnoid.

The symptoms of meningitis are somewhat similar to those produced by a gumma. There may be headache, more marked at night; insomnia, excitement, upon which dementia may supervene; optic neuritis, paralysis of cranial nerves, hemiplegia, and convulsions. The symptoms will necessarily depend upon the extent and situation of the lesions.

DISEASE OF THE VESSELS.—In the second class of cases by which syphilis manifests itself in the brain, the vessels, and especially the small arteries, are the structures which are principally implicated. Syphilitic lesions of the cerebral arteries may be caused by the development of gummatous growths, or they may exist independently. In either case the arteritis is followed by softening of the cerebral substance.

Syphilitic endarteritis (see Pl. XIX., Fig. 1) has been carefully studied and described by Heubner and Cornil, and the process may be stated to be as follows:—The first step is the new formation of endothelial cells on the internal surface of the artery. The deposit takes place in layers, and fills up the openings or depressions in the fenestrated membrane so that the surface of the artery becomes smooth and regular. The layer of newly formed cells separates the fenestrated membrane from the endothelium. The coats of the artery being thus increased in thickness, its calibre is reduced and its elasticity and dilatability are more or less diminished. As the process goes on, the endothelial layer is raised at one or more points by the deposit, and projects into the vessel, thus still further reducing its calibre and favouring the development of a thrombosis. This last peculiarity of the appearances, the projection of the endothelium, is believed to be characteristic of syphilitic arteritis. The change often occurs with considerable rapidity; the calibre of the affected vessels is much diminished and sometimes quite obliterated, the arteries being converted into fibrous cords. The rapidity of the process, and the fact that the smaller arteries are especially implicated, distinguish it from atheroma.

The changes in the brain-substance directly referable to the disease of the arteries, consist of softening and disintegration in patches of the parts supplied by the branches of the vessel. Distinct occlusion of the arteries can sometimes be detected, but when the softening is considerable, the coagula may not be recognisable. If there is disease of the wall of an artery, an aneurism may form, which may rupture. The carotid and middle cerebral arteries would appear to be most frequently affected, but the posterior cerebral and basilar arteries are occasionally the seat of the lesion.

Although frequently preceded by headache and giddiness, the hemiplegia resulting from syphilitic disease of the cerebral arteries is sudden in its onset, being due to the occlusion by a clot in the part of the vessel narrowed by the endarteritis. The attack of hemiplegia may be attended with loss of consciousness, or only slight giddiness may be produced. It frequently occurs during sleep. If the left side of the brain is affected, aphasia is frequently present.

The *symptoms* of cerebral syphilis are of a varied character, and it cannot be said that any one of them is *characteristic* or pathognomonic of the disease. The peculiar way, however, in which certain symptoms are grouped together, their mode of appearance and their modifications during the course of the disease, are often strongly suggestive of a syphilitic origin, especially if other factors appear to be absent. Supposing, for instance, a patient with cerebral symptoms exhibits external evidences of syphilis, such as affections of the skin or mucous membrane, or of the bones or periosteum, it will, in the large majority of cases, be safe to conclude that the cause of the cerebral troubles is the same as that of the external, and therefore more obvious manifestations. In such cases the diagnosis is perfectly easy; but it sometimes happens that symptoms of cerebral syphilis do not appear until many years have elapsed since the primary lesion. If the secondary manifestations have been slight and transient, the connection between the present symptoms and the long-forgotten infection may be very difficult to establish. It must also be remembered that cerebral symptoms due to other causes may, and not infrequently do, occur in patients who have, at some period or other, suffered from syphilis, and it may be difficult, or even impossible, to assign the right value to each factor.

Again, in cases presumably of syphilitic origin, other causes may have lent their aid in producing or heightening the effects. Dissolute habits, excesses of various kinds, especially alcoholic, exposure to great heat or cold, injuries to the skull or peripheral nerves, diseases of other organs—these and similar causes may co-operate with syphilis in producing brain-disease, may modify the symptoms, and may impart some particular direction to the action of the virus. Finally, it is possible that some disease or proclivity to disease may have been latent in the brain, and have been fanned into a flame by the irritative action of the syphilitic poison. All these contingencies must be borne in mind when an attempt is made to establish a diagnosis of syphilis in a given case of brain disorder.

The symptoms met with in cases of cerebral syphilis may be arranged into three groups. The first includes disorders of sensibility; the second, disorders of motor power; and the third, various psychical disturbances.

1. Disorder of sensibility varies much in kind and degree, from slight discomfort or uneasiness to the most violent pain, and from slight loss of sensation to complete anæsthesia of various parts of the body.

Headache is the most frequent symptom of increased sensibility. It often occurs at an early stage, being associated with or preceding the eruptions. At a later period, it may be due to gummata, or to periostitis or osteitis. It is generally worse at night, and is frequently accompanied by giddiness and mental confusion. The pain is at times almost intolerable, and may be the only symptom for a considerable period. If relief is speedily afforded by the administration of large doses of iodide of potassium, there can be little doubt as to the cause of the symptom. If the remedy is withheld and the headache persists, other symptoms, such as loss of memory, especially for certain words, loss of capacity for thought, general diminution of intellectual faculty, convulsions, and even attacks of epilepsy, will probably be superadded. Formication and numbness are sometimes complained of. Sometimes there is marked general hyperæsthesia; the slightest touch causes the patient to wince and scream.

2. The disorders of motor power are very varied as regards their seat and extent. Sometimes they amount to actual paralysis, sometimes to mere weakness, and there are many grades between these extremes. It often happens that the first indication is paralysis of one of the nerves at the base of the cranium, and the third is the nerve most frequently attacked. The symptoms of these paralyses and of lesions affecting the optic nerves have been referred to in a previous chapter under the section on paralysis of the muscles of the eye. They consist of external strabismus, ptosis, dilatation and immobility of the pupil, and diplopia. Sometimes the fourth nerve is paralysed, sometimes the sixth, and the portio dura of the seventh. Partial paralysis of an extremity is another symptom. Some-

times only the leg on one side is affected at first, the arm subsequently becoming weak, and then paralysed. If the paralysis is on the right side, it is generally accompanied by aphasia. The hemiplegia may be sudden when the paralysis is due to arterial disease, or gradual when due to a gumma or to meningitis. It is not attended with loss of consciousness, except occasionally, and in this case the paralysis is due to arterial disease. Prolonged somnolence, amounting to stupor, is often associated with it. This symptom is probably due to constriction of the cerebral vessels, as described at the beginning of this chapter; it is often only temporary, the restoration being caused by the establishment of collateral circulation, or by the capacity for accommodation to changes of vascular tension possessed by the nervous system.

The aphasia, which is so frequent a symptom of cerebral syphilis, presents various peculiarities. The condition is at times intermittent, presenting exacerbations, and is often attended with a gradual or sudden loss of power of the right side. When aphasia is fully developed, the patient is able to utter only one or two short words, or portions of words, and he is apt to use these on all occasions. Sudden attacks of complete aphasia are sometimes noticed. These may pass off, and again and again recur, until the condition becomes permanent. In other cases the aphasia is incomplete. The patient omits words, syllables, or letters in his speech, and the same defects are observed in his writing. In other instances, the speech is slow and delayed, as if thought had become difficult; or certain affixes or prefixes are joined to each word that the patient utters. Sentences are also divided and broken in a peculiar way; words are wrongly arranged and some are left out. Sometimes the aphasia is due to the fact that the spoken or written word is no longer retained in the memory. The idea exists, but the patient cannot find words wherewith to express it, though he recognises them when repeated to him (verbal amnesia). The same defect is observed in writing; the patient finds it impossible to write some words, and can write others only after they have been shown to him. All these variations of aphasia frequently co-exist with right hemiplegia, and are supposed to be due to lesions of the posterior part of the third left frontal convolution. The lesions probably consist, in the majority of cases, of changes in the arteries, such as have been already described. When gummata are present, the symptoms are of a more permanent character, and do not subside and recur. General weakening of the intellect sometimes co-exists with and complicates the aphasia. The patient, in advanced cases, may become almost or quite imbecile, and the peculiarities of his speech will become changed in character during the development and further progress of this condition.

Convulsive symptoms of varying extent and severity frequently occur in the course of cerebral syphilis. Sometimes there are only a few spasmodic movements of certain muscles, while in other cases there are decided attacks of an epileptic nature, and characterised by spasm of the facial muscles, clonic convulsions, and biting of the tongue. Epileptiform convulsions constitute one of the most frequent manifestations of cerebral syphilis; they vary much in character, but are always a sign of severe mischief. Their invasion is usually preceded by other symptoms referable to the nervous system. These are: prostration or diminution of corporeal and mental power: a certain amount of wasting; various dyspeptic symptoms; and severe headache, first confined to a small space and afterwards extending over the vertex, and continuing, perhaps, for weeks or even months. The convulsions first appear in the face, or in one of the upper extremities, rarely in the lower extremities. They are followed by a state of unconsciousness, usually of brief duration, but succeeded by dulness of mind and confusion of ideas, and in some cases, by difficulty of speaking. In severe cases the convulsions continue for several hours, and they may recur at short intervals during several days. Charcot states that the invasion of the convulsions is frequently announced by an exacerbation of the headache, often localised in a spot in the right parietal region. The pain becomes of a throbbing character, and at the end of some minutes, seems to spread over half the face and neck of the same side. These premonitory phenomena last for several minutes, and in some cases the patients have almost always time to get to bed and lie down. Then the upper limb of one side becomes much flexed at the wrist and elbow-joint, and at the same time pronated; rhythmical shocks are then experienced, the arm is shaken, and the hand is jerked round towards the left shoulder; at the same time the muscles of the same side of the face are thrown into convulsions. The lower extremity on the same side then becomes stiff and afterwards convulsed. In some cases the other half of the body exhibits similar symptoms. Loss of consciousness now supervenes, during which the convulsions continue. These finally cease, and, after a period of stupor, the attack passes off. In other cases, loss of consciousness is the first symptom, or immediately follows the convulsive tremors. In cases in which the lesions are of a slight character, the patient remains free from attacks during intervals of greater or less length. If the attacks frequently recur, progressive extension of the lesion may be suspected, and permanent and incurable hemiplegia is likely to supervene. Optic neuritis and various mental disturbances often occur in cases of syphilitic epilepsy. Charcot points out that, according to a recent theory, the gummatous patches in partial epilepsy ought to be situated on the surface of the frontal or ascending parietal convolutions, or, at all events, in their immediate neighbourhood.

The symptoms of motor paralysis in cerebral syphilis vary much in intensity, and as regards the parts affected. The paralyses of the motor nerves of the eyeball have been already alluded to. The facial and the hypoglossal are sometimes affected. Paralyses of certain groups of muscles, and even of single muscles, are occasionally observed. Sometimes a paralysis of this kind exhibits a tendency to spread. Thus, for example, the right arm may be first affected, and some weeks or months afterwards, paraplegia may appear and be followed by paralysis of the bladder, rectum, left arm, and some of the muscles of the neck, etc. The symptoms may closely resemble those of general paralysis of the insane, but are distinguishable from them by the following peculiarities, according to Dr. W. G. Mickle :—1. Distinct history or symptoms of syphilis. 2. Preceding headache, nocturnal and intense. 3. Less marked and persistent excitement and restlessness than in general paralysis. 4. The frequent co-existence of paralysis of one or several cranial nerves. 5. The greater frequency of optic neuritis, early amaurosis, deafness, or vertigo. 6. The paralysis of articulation. 7. The occurrence of meningitis. 8. The variety of the sensory and motor symptoms, their capricious association and succession, and by the absence of the general progressive muscular paresis of the other disease. 9. By the effect of anti-syphilitic treatment.

The fragmentary and apparently capricious manner in which the symptoms appear is a marked peculiarity of cerebral syphilis; and this feature is also observed as a characteristic of the psychical disturbances which remain to be described.

3. The psychical disturbances vary from an abnormal excitement to violent delirium or mania, and between these two extremes there are numerous and varied stages. In another class of cases there are various degrees and kinds of mental debility, as regards the will, the memory, the understanding, and the disposition. The changes observed may be very slight, or may amount to a condition of complete imbecility or dementia. There is, however, nothing characteristic of syphilis in the form or intensity of any one of these symptoms; but their mode of invasion and the manner in which they are grouped, will often indicate their cause with greater or less probability.

A condition of excitement, amounting it may be to mania, is not uncommon; but a condition of fatuity amounting to imbecility is more frequently observed. The memory is defective, and the current of the thoughts is slow and interrupted. There are occasionally attacks resembling hysteria; the patient laughs or cries, or appears childishly excitable, or fretful, or obstinate. Giddiness, transient loss of consciousness, sleeplessness, and headache are frequent accompaniments. The aphasia, which is so often observed, has been already referred to. A decided change is sometimes noticed in the patient's habits, the alteration being always for the worse. It would seem, however, as if the change were of a passive character, and dependent rather upon an apathetic and listless condition of mind, than upon the abnormal development of any customary or latent impulses. Thus, a patient, previously cleanly and particular in his habits, may speedily attain such a condition of indifference as to pass his urine and fæces in his bed or on the floor of his room. There is no paralysis of the sphincters, no stupor, no delirium; but all at once, as it were, the patient seems to have become altogether indifferent, and devoid of any sense of cleanliness. He may evince similar indifference with regard to the duties and pleasures of life; may altogether neglect the former and appear to forget the attractions of the latter. The sexual desire is generally changed; there is sometimes great diminution and sometimes marked exaltation. This latter condition is especially common during maniacal paroxysms, in which intense sexual excitement, amounting to satyriasis, is not infrequent.

As a matter of course, these psychical disturbances are liable to be associated, in the most varied way, with one or more of the motor or sensory disorders already described, and the combination of the symptoms is of much greater value as regards diagnosis than any single symptom. These peculiar combinations are explained by the fact that in syphilis the lesions are not limited to single spots, but, on the contrary, may involve and disturb the functions of various parts of the brain.

It often happens that the subsequent history of the disease affords much more decided evidence of its syphilitic nature than the original symptoms themselves, either individually or collectively. The symptoms are sometimes permanent, but vary in intensity and in the manner in which they are grouped. On the other hand, they are often transitory and variable, and subside and recur in an indefinite manner and degree. Fatal results may speedily supervene, or rapid improvement may take place. Sometimes there are slight prodromal symptoms, and sometimes the severer troubles become developed at once. The alternation of the symptoms is a marked peculiarity. The parts first attacked may be recovering; paralysis of the arm, for instance, may be disappearing, when suddenly or gradually ptosis sets in, or strabismus and diplopia are observed. On the other hand, this alternation of symptoms is not a constant phenomenon. In some cases, the course from the beginning is from bad to worse: epilepsy is followed by imbecility, stupor, coma, paralysis of various parts, and death. The effect of treatment is, however, often witnessed under the most threatening circumstances. Even without appropriate treatment the severe symptoms may subside, and the condition may become chronic and marked by relapses and improvements. After a while, perhaps, the attack recurs with more than its original severity, and fresh symptoms are superadded. All these variations are to be accounted for by the peculiarities of the anatomical lesions. When the successive paroxysms exhibit these marked differences of character, the syphilitic nature of the attacks is strongly indicated.

It will now be convenient, having described the general symptoms which are found in syphilis affecting the brain and its meninges, to discuss the special symptoms which will be produced when certain parts of the brain are affected, and so form a guide which will help us to localise the lesion.

In the first place, we must remember that the effects due to gummata and meningitis will be gradual in their onset, whilst the symptoms produced by syphilitic arterial disease are generally sudden.

When the cortex is affected, either by meningitis or gummatous deposit, the symptoms will vary according to the seat of the lesion.

If the *frontal* lobe is attacked anteriorly to the ascending frontal convolution, the localising symptoms will not be marked, though psychical disturbances generally accompany lesions in this part of the brain. If the posterior part of the left third frontal convolution is involved, there will be usually motor aphasia. If the motor area is affected, there will be localised convulsive attacks or Jacksonian epilepsy, limited perhaps to the centre involved. These convulsions may be followed by paralysis of the parts first affected by the convulsions, denoting a destruction of the motor centre. Stupor and coma are also frequently present. If the angular gyrus is affected, there may be crossed amblyopia and word-blindness. If the occipital lobe is attacked there will be hemianopia.

Lesions of the first temporal convolution will produce deafness on the opposite side; and if the left side is diseased, there will be word-deafness and sensory aphasia. When the central ganglia are attacked, the manifestations are nearly always due to arterial disease, and the middle cerebral artery is most frequently affected. As this artery supplies the part of the internal capsule through which the motor tract of the opposite half of the body passes, its occlusion by thrombosis or embolism, or its rupture will cause a hemiplegia of the opposite side. If due to thrombosis, the onset may be somewhat gradual, and is often preceded by numbness of the parts, then by weakness, and finally the hemiplegia will be pronounced. There is generally no loss of consciousness. If it is due to embolism or hæmorrhage the attack will be more sudden; and in the case of hæmorrhage, coma and convulsions usually usher in the attack.

Lesions of the crus may be due either to arterial disease or to meningitis; there will be hemiplegia of the opposite side, together with paralysis of the third nerve on the same side. Hemianæsthesia sometimes accompanies the hemiplegia.

If the pons is damaged, we have a crossed paralysis; there will be paralysis of the facial on the same side as the lesion, and paralysis of the leg and arm on the opposite side. The fifth and sixth nerves are also likely to be affected with the facial.

In the medulla, a lesion will involve those cranial nerves which have their nuclei in the fourth ventricle. Those most frequently affected are the hypoglossal and the spinal accessory and glosso-pharyngeal. When these three nerves are affected there will be paralysis of one-half of the tongue and of one vocal cord; and this is often combined with paralysis of the levator palati of the same side. There may be also present paralysis of the arm and leg of the opposite side, due to the pyramidal tract being involved in the disease.

The cranial nerves are frequently affected when the lesion is due to syphilitic basal meningitis, the locality of the lesion being indicated by the grouping of the nerves affected.

When the posterior fossa is the seat of the mischief, the fifth nerve and those below are likely to be involved, together with the motor tract; so that in addition to the paralysis of the cranial nerves the lesion may produce weakness in the limbs of the opposite side. Frequently the fifth and sixth, and the seventh and eighth are affected, or the spinal accessory and hypoglossal may be paralysed.

If the middle fossa is affected, the fifth nerve is most likely to suffer, but the third nerve or one optic tract may be attacked.

Syphilitic meningitis of the anterior fossa may cause paralysis of one or both optic nerves, and paralysis of the oculo-motor nerves, as they lie in the wall of the cavernous sinus, or as they pass through the orbital fissure.

The various phases which syphilitic affections of the nervous system so often present are well illustrated by the following case:—A gentleman, aged forty-four, contracted syphilis fourteen years previously. Habits always temperate; chest somewhat delicate. He was treated by me principally with the mercurial vapour bath, as the internal use of the drug was not well borne. Six months after infection, an eruption of rupia appeared, accompanied by very large nodes on the inner side of the head of each tibia (the patient was in the habit of hunting several days a week). Iodide of potassium was given internally, and the iodine liniment was applied to the nodes. All the symptoms soon subsided, and the patient remained in excellent health for eleven years, when he was suddenly seized with an attack resembling epilepsy, which left behind it a general weakness of the left leg and dragging of the left foot. Under treatment with the bromide and iodide of potassium, the lost power was almost entirely regained. A year afterwards another attack supervened, and resulted in a similar condition on the right side, accompanied by aphasia. This latter symptom gradually passed away and the patient's condition fluctuated, exacerbations alternating with improvement. Eventually both legs became paretic, and there was loss of sensation in the whole of the left leg, and up the back as far as the first dorsal vertebra. The right arm also gradually became weak, and there was some loss of power of the sphincters. At one period there was a good deal of "girdle-pain." The aphasia recurred several times, and transient delusions were also noticed. The patient gradually became weaker; dropsy set in, and a fatal termination quickly ensued.

The *prognosis* of syphilitic affections of the brain is, in the majority of cases, favourable, provided always that the patient is subjected to early, appropriate, and continuous treatment. Fournier states that of 90 cases of cerebral syphilis, the results showed that 30 were cured, 13 improved, and 33 unrelieved by treatment, while 14 died. The improvement is more likely to be permanent when the lesion is connected with the bones and periosteum, than when the brain itself is the seat of chronic arteritis or gummatous growths. In a large number of these cases, a renewal of the symptoms in some form or other indicates that the progress of the lesion had been arrested, but that the influence of the virus remains unextinguished. In the most favourable instances, some deterioration of the powers of the mind generally remains. The memory is less retentive than before, judgment is less keen, continuous thought is more difficult, or there is less sensitiveness on matters previously regarded as of the deepest interest. In other cases, the speech is more or less affected; or the muscles are less firm, less vigorous, and less steady in their action; or the sensory organs have lost some of their sensitiveness.

If any hereditary or other predisposition to mental disorder co-exists with the syphilitic lesion, relapses are extremely probable; the influence of the predisposition being considerably augmented by the presence of the specific virus. In spite, however, of these unfavourable considerations connected with cerebral syphilis, it may safely be asserted that disorders of the brain due to this cause are far more amenable to treatment, and admit of a more favourable prognosis, than others of a different origin.

Perhaps the most unfavourable class of cases is that in which the symptoms are the result of the combined influences of syphilis and alcohol. In such cases the prospect is almost hopeless. In order the more to impress a patient with the danger attendant upon excesses of this kind, it is well to put the truth before him in the form of an aphorism, viz., that "syphilis can be best preserved by alcohol."

Syphilitic Affections of the Spinal Cord were until comparatively recently supposed to occur somewhat rarely; but we now know that spinal mischief due to syphilis occurs as frequently as cerebral mischief from the same cause. Either the bony canal or the spinal meninges, or the substance of the cord itself, may be the seat of the various lesions. Exostosis, caries, and necrosis sometimes take place in the bones forming the vertebral canal, affecting the cord secondarily; the meninges are liable to become thickened and adherent to the surrounding parts, and gummatous growths sometimes form either on the external or internal surface of the membranes, and so affect the cord or the nerves proceeding from it. In the cord itself, syphilis occasionally gives rise to a disseminated or a circumscribed infiltration. In the former case, the substance of the cord is either indurated or softened; much connective tissue is developed, while the elements of the nervous tissue waste and disappear. The circumscribed form is characterised by the development of gummatous tumours. These have been found in the substance of the spinal cord, in the form of yellowish firm nodules as large as a pea or nut. A few well-authenticated cases are on record, in which decided syphilitic manifestations in the liver and other viscera co-existed with these growths. In a few cases of syphilitic disease of the spine, the only lesion discoverable after death is hyperæmia of the cord. The symptoms in these latter cases set in early—*i.e.*, during the first year—rapidly increase and quickly lead to a fatal result. Sudden paraplegia is the first symptom, with incontinence of urine and fæces. There is neither pain in the spine, nor anæsthesia in the lower limbs.

As a general rule, the symptoms of syphilitic disease of the spinal cord supervene at a late period, and in a gradual manner. The patient complains of pain in the spine, either diffused or confined to certain spots.

The pain is very often referred to the limbs, and more particularly to the parts supplied by the nerves which are given off from the cord at the spot affected by the lesion. Sometimes a sensation of constriction around the abdomen is complained of, accompanied by a zone of hyperæsthesia, and occasionally, where the nerve filaments are destroyed, by patches of anæsthesia.

There is more or less stiffness, and numbness, together with a feeling of formication and tingling, and the affected parts feel colder than natural.

These symptoms last for a variable period, and they frequently show a tendency partially to subside and then to reappear. Paralysis may result from injury to the cord by gummata, from compression by chronic meningitis, or from the nerve roots becoming implicated and damaged. When the anterior cornua are damaged by growth or compression, or the nerve-roots injured, the muscles supplied will undergo atrophy, and "reaction of degeneration" comes on quickly. The reflexes will be altered in syphilitic spinal disease. They will be abolished if the lesion is situated in the part of the cord concerned in the reflex action, but when the disease is situated above this the muscle reflexes will be exaggerated, the change being due to secondary descending degeneration of the lateral columns. These exaggerated reflexes may go on until a spastic condition is produced.

A gumma may limit its effects to one side, but in unfavourable cases complete paralysis is the result. The symptoms vary according to the part of the spinal cord which is affected. If the lesion is in the lower portion of the dorsal region, there will be more or less profound paralysis of the legs with exaggerated reflexes and paralysis of the sphincter of the anus, generally associated with paralysis of the detrusor urinæ muscle. If the lesion is higher up, in the cervical portion of the spinal cord, there will be, in addition to the paraplegia with exaggerated reflexes and paralysis of the sphincter ani and bladder, paralyses of the upper extremities, of the thoracic and abdominal muscles, and also of the diaphragm. The patient is quite helpless, and bed-sores are almost certain to occur. Death from asphyxia is likely to supervene; recovery is rare, but it may occur to a partial extent. The outbreak of the symptoms is slow and gradual, and the course of the disease presents numerous oscillations, as in the case of cerebral syphilis. Convulsions of the paralysed parts are sometimes noticed. Sensibility generally remains intact.

Syphilitic affections of the spinal cord are usually of long duration, and spinal and cerebral lesions frequently co-exist. Owing to the complicated structure and smallness of the organ, comparatively minute lesions may give rise to many symptoms. If recognised early, and treated in an appropriate manner, recovery may take place. Death generally results either from an extension of the mischief along the course of the cord, or from renal disease, secondary to the paralysis of the bladder.

The distinguishing features of spinal disease due to meningitis and growths may be briefly noted.

In *meningitis*, when the dura is involved, the symptoms supervene in a gradual manner; sharp shooting pains will be felt, which are referred to the distribution of the nerves, the roots of which are implicated in the process. Later on, muscular wasting is noticed; and if the lesion involves the membranes over the cervical enlargement—a very favourite place—the disease may be mistaken for progressive muscular atrophy. There will be loss of reflex actions in parts supplied by the nerves which are involved, and paralysis is likely to supervene from compression of the cord by the inflammatory thickening. When this paralysis has taken place, the reflexes below the inflamed spot will be exaggerated.

In *gumma* the symptoms come on gradually. If the gumma is small they may be of limited extent. There is pain referred to the distribution of the nerves involved. It may be very severe and paroxysmal, and at first is generally unilateral. Muscular spasms may be present, especially if the gumma is situated on the meninges. Paraplegia generally supervenes. The symptoms may come on gradually, one leg being affected before the other, and later on sensation is affected. The reflex actions are altered, and these changes vary with the position of the growth. If this is situated in the cauda equina or lumbar region, the leg reflexes will be abolished. When the lesion is above this, the reflexes below will be markedly exaggerated, often so as to produce spasticity, but the reflexes at the level of the lesion will be lost.

A form of spinal cord disease, known as locomotor ataxy, or sclerosis of the posterior columns, is frequently due to the influence of the syphilitic poison. The symptoms and morbid anatomy of this disease are now well recognised, but the question connected with our present subject refers to the probability of syphilis playing an active part in the causation of the malady. According to Charcot the specific seat of the lesion in ataxy is a band of white matter situated between the posterior pyramid of the cord and the posterior roots of the nerves, with the adjacent part of the posterior cornua. The condition may be briefly expressed as "lateral fasciculated sclerosis of the posterior columns." The symptoms are, loss of power in co-ordinating the voluntary movements, indicated by a peculiar unsteadiness in their performance, and usually preceded by pain in various parts. The patient first complains of fatigue after slight exertion; of vesical irritability; neuralgic pains in various parts; impotence; diminution of cutaneous and muscular sensibility, and subsequently of loss of power of muscular co-ordination, without paralysis, but evinced by an unsteady staggering gait, and inability to maintain the equilibrium and to stand erect when the eyes are closed. The knee-jerks are abolished. As the case advances, there is often more or less defect of vision, and sometimes paresis of the motor oculi and sixth nerves.

The majority of authors who have written on nervous diseases regard syphilis as a frequent cause of locomotor ataxy. Some, indeed, go so far as to say that 50 per cent. of the cases of the latter affection are essentially due to syphilis. It is confessed, however, that the lesion in locomotor ataxy is very different from those which are ordinarily due to syphilis. "It is a degeneration limited to a system of structure, and contrasts with the random distribution of ordinary syphilitic processes." Erb has analysed 369 cases he had observed, 300 of these were patients in the upper walks of society, 50 were ordinary hospital patients, and the remaining 19 were women.

Of the 300 cases, syphilis was present in 89 per cent., and in the hospital cases it was found in 76 per cent.

M. Fournier believes that syphilis is the cause of tabes in a large majority of cases. He refers to the frequency with which the diseases are found to be associated; to the almost exclusive development of ataxia in the tertiary period; to the frequent similarity or identity of ataxic symptoms with those long known to be characteristic of syphilis; to the beneficial influence often exercised by anti-syphilitic treatment; and, lastly, to the impossibility, in many cases, of finding any other imaginable cause for the production of the disease.

Many other observers, too, have corroborated these facts, and from everyday experience we must conclude that locomotor ataxia is frequently caused by syphilis.

We may inquire how syphilis produces ataxia, and endeavour to discover whether the latter is a true symptom of syphilis of the nervous system, or whether syphilis is only a predisposing cause. The question has certainly not been settled definitely at the present time; but cases have been reported* in which symptoms exactly resembling locomotor ataxia were set up by a specific infiltration limited to the posterior columns of the cord, and others in which anti-syphilitic remedies caused the disappearance of undoubted tabetic symptoms.

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* Hoffmann and Kuh, "Archiv für Psych.," vol. xxii.; Hoppe, "Berlin. Kl. Wochenschr.," 1893, etc.

Syphilitic Affections of the Nerves.

The cranial and the spinal nerves are sometimes affected in the course of syphilis, most commonly in an indirect manner; that is to say, as a consequence of the development of gummata or of thickening of membranes, the adjacent nerve-trunks are compressed and injured. In some cases, the nerves appear to be independently affected. Reference has been already made (see page 281) to cases in which the optic nerves at the base of the brain have been found enlarged and softened, other syphilitic lesions being present at the same time. A condition of interstitial neuritis would therefore appear to be directly due to syphilis, and besides this, gummatous masses are sometimes formed in the nerve-trunks themselves. The cerebral nerves are the most frequent seat of these syphilitic changes. In addition to the optic, the olfactory nerves have been found atrophied and destroyed. Trifacial neuralgia is sometimes met with in syphilis; anæsthesia of the fifth nerve less commonly. The syphilitic affections of the third, fourth, and sixth pairs have been already alluded to. Paralysis of the fifth pair has been noticed in a case in which the Gasserian ganglion was found atrophied, as a result of pressure from thickening of the dura mater. Facial hemiplegia of syphilitic origin is not very rare; it may be due to exostosis in the neighbourhood of the stylo-mastoid foramen, or to syphilitic deposits at the origin of the nerve. The affections of the auditory nerve have been alluded to at page 288. The hypoglossal may be affected by meningitis or by pressure. The affection is generally unilateral, and is accompanied by wasting of the muscles supplied by the nerve. Reference has been made on page 311 to lesions affecting this nerve, together with some of the fibres of the spinal accessory nerve.

In all cases of syphilitic affections of the peripheral nerves the diagnosis must be made by the aid of the patient's history and of any co-existing manifestations. The symptoms may be due to a variety of causes. In the case of paralysis of the third nerve, syphilis may always be strongly suspected, as it is by far the most common cause of this particular lesion.

With regard to the spinal nerves, these are less frequently affected in the course of syphilis, but they sometimes manifest disorders of motion and sensation in cases where a syphilitic origin may with every probability be suspected. It is likely that sciatica is sometimes due to syphilis, though it is not fair to infer such a causation for every case benefited by mercury or by iodide of potassium. Marked nocturnal exacerbation of the pains would support the view that the complaint was of syphilitic origin. In all cases of neuritis, attended with nocturnal exacerbations, inquiry should be made as to any previous infection. In some cases, neuritis, probably due to syphilis, has been followed by atrophy and loss of electrical excitability of the muscles. The muscles of the back, neck, arms, and legs may be thus affected. As a matter of course, in all these cases, no positive diagnosis can be made of the cause of the symptoms, but with syphilitic antecedents and the absence of other causes, a specific origin may fairly be assumed.

THE TREATMENT OF SYPHILIS OF THE NERVOUS SYSTEM.—The treatment of syphilis, when it affects the nervous system, should be efficient and prompt. As these disorders are generally regarded as tertiary manifestations, a great deal of reliance is frequently placed upon the exhibition of iodide of potassium; and these cases are too often treated with this drug alone. Now, whilst fully admitting that the iodide is a most valuable drug, and will in many cases give for a time most excellent results, still very much greater benefit will be derived from the dual administration of mercury and iodide. The iodide should be given in large doses, commencing at first with 10 grains three times a day, and increasing this by daily increments up to 60 grains or more three times a day, if necessary. When improvement begins to be manifested, the increase of the dose may be stayed. Where large and continuous doses of the iodide are required, the sodium salt is to be recommended as not being so depressing in its action on the heart-muscle.

In addition to the iodide, mercury should at the same time be administered. This is best exhibited either in the form of intramuscular injections of a soluble salt, or by inunction. The former plan is very useful where we want to get a patient quickly under the influence of the drug. One-tenth of a grain of sal alembroth or of sozoiodol of mercury may be daily injected until the gums are very slightly affected, when the frequency of the injections may be gradually lessened.

Baccelli * speaks highly of intravenous injections of perchloride of mercury in syphilis of the nervous system, and relates two cases of cerebral syphilis which improved very much, after other methods of treatment had been tried and found unavailing.

The solution used is hydrarg. perchlor. 1 part, chloride of sodium 3 parts, distilled water 1,000 parts.

By suitable pressure, the veins at the elbow are made to stand out, and 1 c.cm. of the solution is injected, with strict antiseptic precautions. The proof

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* "Berlin. Klin. Woch.," March, 1894.

that the injection has been made into the vein is the absence of pain and of subcutaneous swelling. The injection is repeated daily, the dose being gradually increased until it reaches 8 milligrammes of perchloride a day. Personally, we have had, so far, no experience of this treatment, but it certainly deserves a trial in selected cases.

It occasionally happens that the iodide and mercurial course appear to have but little effect upon the symptoms, even when administered in increasing doses and for a prolonged period. Under these circumstances we have for some time past recommended a course of "Zittmann," and, so far, the results obtained have exceeded our most sanguine expectations. This method of treatment will be found fully described in the chapter on Treatment, to which the reader is referred for further particulars.

The hygienic management of a patient, the subject of cerebro-spinal syphilis, is a matter of great importance. His diet should be plain and unstimulating; he should be kept from all sources of excitement, whether mental or bodily, and the strictest rules must be laid down with regard to exercise and hours of rest. Alcohol must be forbidden, unless for very cogent reasons. Patients suffering from inveterate syphilis are easily affected by small quantities of alcohol. If, however, the patient is much reduced and the appetite flags, one or two glasses of claret may be allowed. A warm bath daily is likely to be beneficial. It promotes tissue change and soothes the nervous system. Where there is much excitement, recourse may be had to bromide of potassium, hyoscyamine, or to hypodermic injections of morphine.

Where the symptoms point to quite a localised lesion in the brain or of its meninges, or in the coverings of the cord, and where prolonged treatment by drugs has had no effect upon the growth, the question of its removal by surgical means may with propriety be discussed.

The complications that may arise in cerebro-spinal syphilis, such as bedsores, cystitis, etc., must be treated on ordinary principles.

CHAPTER XXI.

MALIGNANT SYPHILIS.

Habitual experience teaches us that, as a general rule and under ordinary circumstances, syphilis runs a comparatively mild course, and seldom gives rise to symptoms marked by rapidity of accession or violence of character. In a small proportion of cases, however, the disease exhibits features of a very different type. All the symptoms are severe, many of them occur simultaneously or in very rapid succession, and all traces of division into stages and periods are almost, if not altogether, obliterated. We know from history that the epidemic of syphilis at the end of the fifteenth century was characterised by the severity of the symptoms, as well as by the extent to which it spread; and that it was in consequence wrongly regarded as a new disease. Cases sometimes occur at the present time which serve to remind us of the accounts given of the epidemic in question, which apparently did not retain its pestilential character for more than seven years. Fracastor tells us, in his history of this great epidemic, that some of its most marked features were the phagedænic character of the secondary cutaneous sores; the destruction of parts, as the nose, fauces, and larynx; the size and frequency of the gummatous tumours; the pains in the limbs; the emaciation and the utter prostration of the patient. In the introductory chapter of this volume the circumstances which favoured the aggravation of the virus have been briefly described.

In syphilis, as seen at the present day, it rarely happens that secondary and tertiary phenomena occur simultaneously in the same patient, or that secondary symptoms reappear after tertiary manifestations have been developed, or that the general course of the disease is otherwise than chronic. In the exceptional cases about to be described, the disease runs an acute course, the intervals between the various stages are extremely brief, and certain stages are altogether wanting. Such cases have been described by the term "malignant or galloping syphilis."

In this form of syphilis the cutaneous manifestations are generally very prominent, and are especially characterised by degeneration instead of resolution of the lesions, by the rapidity with which one form merges into another of a more destructive character, and by the general tendency to disintegration. Papules are very readily converted into pustules, and these again speedily form ulcers. The pustules may become dry, but no healing takes place, and the sloughs soon separate, revealing the ulcerated surface beneath. These ulcers are characterised by their sharp, abrupt borders, and their great depth. They are usually circular, and are spread over the whole body. They exhibit no marked serpiginous character, as in ordinary syphilis. True gummata of the skin are seldom seen in malignant syphilis. In consequence of the rapidity with which disintegration sets in, there does not appear to be time for the tumours to develop.

The affections of the mucous membrane appear to follow the same rule as prevails in ordinary syphilis—

i.e., when the skin-affections are severe the mucous membranes suffer but little, and the reverse. It seldom happens that the skin and the mucous membranes are affected at the same time and with equal severity, but if the skin escapes, severe lesions of the mucous membrane—*e.g.*, of the nose—are not uncommon.

Perforation of the cartilaginous septum has been observed to occur six months after infection, and in another case ulceration in the rectum supervened before the end of the first year.

With regard to the affections of internal organs and structures, it is almost always the case that the periosteum and bones are affected early in malignant syphilis. Disease of the bones, especially in the form of nodes, was a marked feature of the European epidemic of the fifteenth century. Renal disease appears to be a common accompaniment of the other symptoms of malignant syphilis. Diseases of the brain are also of frequent occurrence. Reference has already been made in a former part of this work (see p. 30) to cases in which marked ulcerative lesions of the skin (rupia) were rapidly followed by severe cerebral symptoms. Fournier has reported a case in which a cerebral gumma was developed and terminated fatally in a little more than three months after infection. Many other cases are on record in which cerebral symptoms appeared during the first year.

The general course of malignant syphilis, so far as regards the earliest stages, resembles that of the ordinary disease. The first eruption that makes its appearance may present no special feature, and may assume either the roseolar or papular form. In the majority of cases a pustular eruption, in itself a severe symptom, marks the transition to the tertiary stage, and it is noticed that the pustules do not dry up and heal, but become rapidly converted into ulcers. It less frequently happens that the first tertiary symptom is a papular or tubercular eruption which runs its course and subsides, and is followed by ulceration. Those cases in which, so to speak, the whole force of the disease falls rather upon other organs than upon the skin, are not characterised by any special cutaneous manifestations differing from those commonly seen, but the malignancy of the attack is shown by the premature development of the disease in the affected organ. Cases of early cerebral syphilis, already referred to, are instances of this nature.

The interval which elapses between the infection and the appearance of tertiary symptoms is a measure of the malignancy or otherwise of the disease. In cases to which the character of malignancy may be fairly attributed, the interval varies within certain limits, but may be assumed to average four months. With regard to the order in which the symptoms follow each other, the same rule is observed as in the ordinary course of the disease—that is to say, the severe affections of internal organs are later in their appearance than those of the skin. It may be laid down as a general rule, that in malignant syphilis the severe cutaneous manifestations appear within six months, and the severe affections of internal organs within a year after infection.

Another characteristic of malignant syphilis is the proneness which the manifestations exhibit towards recurrence. These recurrences may be noticed during several years, even in tolerably favourable cases. They at last cease, however, if proper treatment of all kinds be adopted, but in some cases the attacks leave behind them irreparable lesions of important organs. The prognosis is therefore mostly unfavourable, and especially if the patient be in enfeebled health and in poor circumstances. On the other hand, under favourable conditions, the disease may run its course and subside as completely as the milder forms.

With regard to the causation of malignant syphilis —*i.e.*, the reason why in some cases the disease should be so much more severe than in others—it is difficult to make any very positive statements. In the first place, examples of this type of the disease are rarely seen at the present day; and secondly, we require to know more of the cause of syphilis in general before venturing upon an explanation of its varieties. It might be supposed that patients whose constitutions have been enfeebled by excesses, by attacks of previous disease, and other causes which produce cachexia, would be liable to exhibit severe symptoms as a result of syphilitic infection. Other predisposing causes which have been suggested are the co-existence of tubercular disease, pregnancy, prolonged lactation, old age, and chronic alcoholic poisoning. The cases that have been published, however, fail to prove that there is any definite causal connection between these conditions and malignant syphilis. But few of the cases occur in inveterate drinkers, and, considering how widespread is the abuse of alcohol, and how often those who are the victims of this vice contract syphilis, we ought to see more examples of the malignant type if alcohol were a potent factor in its production. Abuse of alcohol always influences the course of syphilis in an unfavourable manner, but it by no means necessarily gives rise to the malignant type of the disease. The cases likewise show that the character of the disease is slightly, if at all, influenced by the age of the patients. It would, however, appear that iritis of a severe form is rather prone to occur in patients past middle life.

There is also no evidence to prove that cachexia of any kind aids in the production of the symptoms of malignant syphilis. In the recorded cases many of the patients were in robust or very fair health. Marked cachexia sets in, however, during the progress of the disease, and especially when prolonged or extensive suppuration, or diseases of the bones are present. In a few cases the patients were the subjects of pulmonary tuberculosis.

It has been supposed that the violence of the symptoms is due to some specific difference in the activity of the germ, or to a variation in the intensity of the syphilitic virus. This, however, is only an assumption, which is rendered improbable by certain facts, amongst which may be mentioned cases in which men suffering from malignant forms of syphilis have infected their wives, in whom the disease has exhibited only its ordinary features. Moreover, cases often occur of several individuals infected by the same person, but no two exhibited the same degree of virulence in the character of the symptoms induced. It is well known that cases of syphilis occurring in seaport towns, and in cold damp weather, often assume a certain degree of acuteness, but there is nothing extraordinary in such consequences. Syphilis requires not only medicinal but hygienic treatment, and if the latter be unattended to, the action of the poison will be aided in proportion to the neglect.

With regard to the *treatment* of malignant syphilis, the general indications and the remedies will be discussed in a succeeding chapter. It is here sufficient to say that, as a general rule, mercury is badly borne, and must always be administered with great care in such cases. Iodide of potassium is far more efficacious; it should be given in full doses up to 120 grains *per diem*, with sarsaparilla. Tonics, as quinine and iron, may be given at the same time. Good food, sea air, cleanliness, warm or tepid baths, and stimulants in strict moderation, are valuable adjuncts.

CHAPTER XXII.

SYPHILITIC RE-INFECTION.

As a general rule, syphilis occurs but once in the same individual—that is to say, one attack protects the vast majority of patients from subsequent contamination. In this respect syphilis resembles small-pox, scarlatina, measles, and typhus fever. But just as is observed with regard to these febrile affections, so also in syphilis—one attack does not always confer immunity if the patient be exposed to fresh contagion.

Many cases have been reported which leave no doubt as to the possibility of the recurrence of an indurated chancre, with subsequent evolution of the whole series of constitutional symptoms. I have met with this re-infection several times. In two cases re-infection occurred at intervals of three and five years respectively. Both patients presented for a second time indurated sores, followed by roseola; and both had been subjected to a nine months' course of mercury for the first attacks. In five other cases, all of which, curiously enough, I have noted within the last twelve months, there was an undoubted second infection. Each of these patients had undergone a thorough mercurial course; and in none had the interval between the first and second infection exceeded five years.

A remarkable case of syphilitic re-infection is recorded by Zeissl.* A man contracted syphilis in 1848. Eighteen months afterwards he was found to have frontal exostoses, the *corona Veneris*, and other signs of constitutional syphilis. He underwent a prolonged course of mercurial inunction, followed by Zittmann's decoction and iodide of potassium, and was discharged "quite cured" six months after admission into hospital. More than five years afterwards (having remained perfectly well in the interval) he presented himself with an excoriation on the left side of the middle line of the prepuce, and stated that it was the result of a suspicious connection. The patient's antecedents being well known, no bad consequences were expected. After some time, however, the man reappeared, the excoriated spot was found to be converted into a well-marked induration, and the glands in the left groin were hard and prominent. The patient exhibited no sign of the previous syphilitic infection. Seven weeks after exposure to contagion, a pale brown eruption of roseolar patches appeared on the sides of the chest. Mercurial inunction was again resorted to, the induration gradually diminished, and the glands in the groin became softer and less prominent. This and many other similar cases prove that the so-called syphilitic diathesis may become extinguished, and that the disease may be reproduced in the same individual. The possibility of a second attack of syphilis has long been recognised by military surgeons.

Eleven cases of syphilitic re-infection have been recorded by the author's late colleague Mr. Gascoyen.† In these cases, the interval between the two infections varied from one year and nine months to more than nine years, and the severity of the second attacks bore no relation whatever to that of the first. In four cases, the re-infection was in the form of an indurated chancre only; but in six, undoubted constitutional symptoms appeared. In six of Mr. Gascoyen's cases the patients were, at the time of re-infection, suffering from tertiary syphilis; and this fact supports the theory that the advanced symptoms must be sequelæ rather than manifestations of a still existing disease.

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* "Lehrbuch der Syphilis," 1882, p. 325.

† "Med.-Chir. Trans.," vol. lviii.

Diday has recorded twenty cases of syphilitic re-infection observed by him during six years, and he mentions one case in which four re-infections occurred. As a general rule, when the interval was short the symptoms of the second infection were of a mild character. On the other hand, when the interval was considerable the symptoms of the second attack were more severe. Sloughing of the sore has sometimes been noticed in a second attack of syphilis.

These cases have an important bearing on the question of the curability of syphilis. If a person contracts an indurated chancre, and this is followed by enlargement of the inguinal glands and further constitutional symptoms, it may fairly be concluded that he was free from syphilis at the time of exposure to contagion, notwithstanding any previous history of syphilitic infection. Mercury had been given in all of Mr. Gascoyen's cases; the re-infection which ensued is confirmatory of the opinion of those who regard mercury as an antidote to the syphilitic virus.

In all cases of supposed syphilitic re-infection it is necessary to guard against the error of mistaking a relapsing induration for a primary lesion. There are other sources of error. A syphilitic subject, with no obvious manifestations of the disease, may contract a soft sore; and without due care, some relapsing skin-affection might be regarded as evidence of the consequences of a second infection. To prove re-infection there must be (1) unequivocal evidence of a first attack (*i.e.* of an indurated sore followed by glandular enlargement and an affection of the skin or throat), and (2) an existing second attack, with symptoms of a like character.

CHAPTER XXIII.

THE GENERAL DIAGNOSIS AND PROGNOSIS OF SYPHILIS.

There is, in many cases, no difficulty whatever in recognising the manifestations of syphilis; whilst, in others, it may be for some time impossible to come to a positive decision.

With the exception of gummatous growths, the lesions of syphilis present no peculiar histological characters; but the primary induration, the glandular enlargement, and the subsequent series of changes in the skin and mucous membranes constitute an aggregate of symptoms absolutely pathognomonic of the disease. The diagnostic signs of these various affections have been already described, and further reference to them is here unnecessary. Other symptoms, such as the papular eruptions, and especially those on the palms of the hands, symmetrical ulcerations of the tonsils, iritis, nodes on the tibiæ and on the cranial bones, serpiginous ulcers and ulceration due to superficial gummata, all possess more or less characteristic features; and the presence of any one or more of these lesions is sufficient to excite suspicions of syphilis. There are, however, many other symptoms produced by this disease, which are by no means peculiar to it, and if these alone are present the diagnosis becomes difficult, especially when, as often happens, the patient has failed to notice any previous symptoms, or wilfully conceals their occurrence.

In the first period of syphilis, the induration and the glandular enlargement are seldom wanting, although the former may be very slight, and is therefore difficult of detection. A very guarded opinion should always be given when a sore on the genital organs, the result of a suspicious connection, is *first* presented for examination. It may be either a soft sore, or one in which induration will subsequently become developed, and time alone will enable the practitioner to decide as to the true nature of the affection.

If induration be already present the diagnosis is clear; but a considerable interval may elapse before this symptom shows itself (see pages 92 *et seq.*). In women (see p. 99) the layer of induration at the base of an ulcer on the vaginal walls is sometimes no thicker than parchment, and is therefore easily overlooked. The existence of glandular enlargement will, however, establish the diagnosis.

Errors in diagnosis are apt to be committed at the beginning of the secondary stage, and without a due knowledge of the history and a careful examination of the patient, the febrile symptoms and the other evidences of constitutional disturbance may easily be attributed to other causes (see p. 112). The symptoms may be mistaken for those of rheumatism, measles, intermittent or other fevers; but even if no other lesions be present, the enlargement of the cervical and inguinal glands will always be discoverable in syphilitic cases. Elevation of temperature beyond 102° is rarely noticed.

The distinguishing characteristics of the secondary symptoms have been given in previous pages. The most important points to be noticed are their dissemination over a large area; their coppery-red colour; the frequent co-existence of several forms of lesions; the absence of itching, and their more or less symmetrical development. Glandular enlargement is never absent at this period, and condylomata are not infrequent.

When several years have elapsed since infection took place, it may be expected that the symptoms will assume a less definite character. The glandular enlargement will probably have subsided, and any cutaneous eruption will be more irregular in form and distribution. A general cachectic condition may be a very prominent feature, and with this may be associated pains resembling those of rheumatism and attended with nocturnal exacerbations, neuralgia, remittent febrile attacks, paralysis of cerebral or spinal nerves, etc.

The tertiary cutaneous manifestations are less characteristic than those of the secondary stage; they are generally limited to a few points, they are slowly developed and often terminate in ulcers which leave behind them well-marked cicatrices. These white, depressed scars, with brownish-red patches, so often seen on the lower extremities, are strongly suggestive of syphilis. Secondary and tertiary affections of the mucous membranes accessible to observation, often leave characteristic changes behind them. Thus, perforation or destruction of the soft palate, flattening of the bridge of the nose, cicatrices in the tongue or in the pharynx, leucokeratosis of the tongue, are all more or less decided indications of syphilis.

The diagnosis of the visceral lesions is often attended with considerable difficulty, and especially in cases in which there are no active manifestations of syphilis accessible to observation. When there is any reason to suspect syphilis, those parts of the body in which the earlier symptoms appear must be carefully examined; and it frequently happens that glandular enlargement and cicatrices in the skin or mucous membrane afford a clue to the real nature of the case. The state of the eyes and of those bones which are covered only by skin will often assist the diagnosis. In the case of women, a history of several abortions should always arouse a suspicion of syphilis. In all cases of doubtful origin, but in which syphilis is suspected, iodide of potassium should be exhibited, or mercury may be given to aid the diagnosis.

Prognosis.—The question of prognosis has been already incidentally referred to in various parts of this volume; the general aspects of the subject now remain to be considered. It may be briefly stated that, at the outset, no two cases admit of a precisely similar prognosis, the fact being that in some patients the symptoms more or less rapidly subside, and the poison to all appearances is completely removed from the system; while in others the disease can scarcely be said ever to come to an end. The interval between these extremes is occupied by cases presenting innumerable differences in the severity and number of the symptoms, and in the periods of time occupied by the various manifestations.

With regard to the *primary induration*, it is very questionable whether any relation exists between its *amount*, and the severity or prolongation of the subsequent symptoms; and the same remark holds good with regard to the amount of the induration and swelling of the neighbouring glands. A gradual and progressive diminution in the size of the glands is a favourable symptom. It has been supposed that the *locality* of the primary induration influences the course of the disease, and that severe symptoms are likely to follow infection on the fingers. It cannot, however, be regarded as certain that any differences of this kind really exist; the severity of the symptoms in these cases may be due to the fact that the lesion is very often overlooked or disregarded for some time, and the nature of the sore not diagnosed until constitutional symptoms have made themselves manifest. As a matter of course, the occurrence of phagedæna renders the prognosis decidedly unfavourable as regards immediate consequences and the future results of the case.

The *secondary* manifestations are of more assistance in the prognosis. If these be of a mild character—*e.g.*, if the eruption be roseolar, and not papular or pustular—the disease, in all probability, will be of a mild type. On the other hand, the early appearance of a papular eruption indicates a severe form of syphilis; and the development of pustules, followed by severe ulceration, renders the prognosis very unfavourable. Eruptions covered with rupial crusts are the most serious of all. Their liability to be followed by cerebral and spinal disorders has been already referred to (see pages 30 and 84).

The development of gummatous growths likewise renders the prognosis grave. Considerable destruction of tissue, and the probability that similar formations will take place in internal organs, constitute the principal elements of danger. When this gummatous or tertiary stage has been reached, much will depend upon the organ affected and upon the general condition of the patient. If, for example, the lesions are superficial, the prognosis will be more favourable than if the symptoms indicate an affection of the nervous system, or of the liver, or other important organs. With regard to cerebral syphilis, the prospects of improvement and recovery under suitable treatment are, *cæteris paribus*, greater than when the symptoms are due to other causes. The co-existence of severe visceral disease with other manifestations of tertiary syphilis is a sign of grave import. A state of cachexia dependent upon affections of the skin or bones is less serious than a similar condition due to disease of some internal organ.

The general condition and the constitution of the patient are important elements in forming a prognosis. If a healthy young adult contracts syphilis, and is forthwith subjected to proper treatment, the probability is that complete recovery will take place. If the patient at the time of infection was in a more or less unhealthy condition from any cause, the prognosis becomes proportionately unfavourable. Tubercular subjects are especially prone to the pustular forms of eruption, and to ulcerative affections of the skin, and when these patients become infected with syphilis the lesions are almost always severe, the two diseases mutually influencing each other in an unfavourable manner. When syphilis is complicated by Bright's disease, its course is usually rapid and severe.

The *habits* of the patient, both before and after infection, will materially influence the course and progress of the disease, and have therefore an important bearing upon the question of prognosis. The elimination of the poison is promoted by everything which tends to improve the general health, and is retarded by all habits of an opposite character. Of these latter, alcoholism is certainly the most potent for evil. The dogma that "syphilis is best preserved by alcohol" is one upon which it is impossible to lay too much stress. All other forms of dissipation are hurtful in a degree corresponding to their extent and effect upon the general health. Other unhealthy conditions—*e.g.*, want of cleanliness, insufficient nourishment, exposure to cold and damp, etc.—have a more or less decided effect in increasing the severity and in favouring the continuance of syphilis.

With regard to *age* as influencing the prognosis, it has been previously mentioned that, as a general rule, syphilis contracted after the age of forty is a much more serious affection than in younger subjects. Patients in middle life seldom get rid of the disease, and with advancing years the probability of visceral complications and of other unfavourable conditions becomes increased.

The prognosis in cases of the *hereditary disease* will be found in a subsequent chapter.

There is much difference of opinion with regard to the question of *sex* as influencing the intensity of the disease. It is generally stated that women, as a rule, suffer more severely than men, but our experience leads us to quite the opposite conclusion. It is no doubt true that some of the most severe manifestations of syphilis are seen in women; but they are generally met with only in prostitutes of the lowest stamp, and in these cases, the severity of the symptoms is due not so much to the severity of the syphilitic affection as to the co-existence of several unfavourable conditions which tend to foster and preserve the disease. If, however, we compare the results of syphilis upon men and women belonging to the well-to-do classes, and placed, as nearly as possible, under similar conditions, it will be found that women generally are far less severely affected than men, and that they recover more completely and in a shorter time. Probably this difference is to be attributed, in part at least, to the difference in habits before and after infection; but I think that the process of menstruation plays a still more important part in diminishing the severity of the disease, by its depurative action on the blood and other fluids of the body.

For remarks on the prognosis in cases of malignant syphilis, the reader is referred to the chapter on that subject.

There is one other point to be considered, and one which plays a very important part in the prognosis, and that is the treatment the patient has undergone for the cure of the disease.

As a matter of course, the prognosis, *cœteris paribus*, is very much more favourable in patients who are subjected to early and appropriate treatment, and who attend implicitly to all instructions, than in patients under opposite conditions. The prognosis will also be guided, to some extent, by the manner in which the remedies—and this applies with especial force to mercury—act upon the system generally and upon the manifestations of the disease. If little effect be produced, and if the patient's general health seem to become impaired during the course of treament, and especially if salivation is rapidly caused, the prognosis will be unfavourable. On the other hand, when the treatment is followed by decided improvement of all symptoms, and tolerance of the remedies is observed, the prognosis becomes hopeful and the probabilities of an ultimate cure are greatly increased.

The question as to the possibility of syphilis being cured has been already referred to in the chapter on Syphilitic Reinfection.

CHAPTER XXIV.

HEREDITARY SYPHILIS.

The fact that syphilis is transmissible from parent to offspring was recognised by writers of the sixteenth century. Paracelsus, in a book published in 1558, wrote "Morbus gallicus et hæreditario jure ac contagii consortio communicari posse." Another writer, Augier Ferrier, in 1553, stated that hereditary syphilis had three possible sources of origin: (1) the semen of a syphilitic father; (2) the impregnated ovule of a syphilitic mother; and (3) infection of the fœtus by the blood of the mother who had acquired syphilis after conception. This view was adopted, either partially or entirely, by several authorities in the seventeenth century. Hunter denied the hereditary transmissibility of syphilis from a father, the subject of the constitutional disease. This opinion was in accordance with his theory that the secondary manifestations of syphilis are not infectious.

At the beginning of the present century, Swediaur contended that syphilis may be inherited, and that in almost every case of the kind the disease is transmitted from the father and not from the mother. Cullerier and others, on the contrary, asserted that syphilis is transmitted to the fœtus through the mother alone. Ricord at first adopted Hunter's view, but afterwards allowed that hereditary transmission might occur, but only as an exception to the general rule.

It is now, however, universally admitted that hereditary syphilis in the child may be derived from one or both parents. The different ways by which the ovum is supposed to become infected will be presently described.

Hereditary syphilis may be divided into three varieties—congenital, hereditary, and late hereditary. In the congenital variety the lesions are present at birth; in the other varieties, they do not appear until some time later. This division has no practical value, and as the term "hereditary syphilis" includes all varieties, this expression is generally adopted.

Etiology.—It will be convenient here to discuss the etiology of hereditary syphilis, and endeavour to trace the mode by which the disease infects the *fœtus in utero.*

Hereditary syphilis may occur when the disease affects—(*a*) both parents; (*b*) the mother; (*c*) the father.

Hereditary syphilis, due to the transmission of the disease from both parents, cannot be separated etiologically from descent from the mother alone.

The methods in which it is stated the mother may be infected by the father are usually arranged under four heads:—

(1) *Direct infection of the mother by contact.*—This is the usual and the most frequent method of infection. In a well-observed case, the incubation period, primary sore, enlargement of the lymphatic glands, and general cutaneous eruption will be noticed.

(2) *Infection of the mother by the semen, without pregnancy occurring.*—It is stated by some observers that the spermatic fluid of a syphilitic man may infect the woman without producing any primary

sore, and that this may take place without the occurrence of pregnancy. This theory of infection is not very generally held, and rests only on expressed opinions of certain writers. Up to the present time no evidence has been adduced to prove that infection can take place by this means.

(3) *Simultaneous infection of the mother and ovum by the semen.*—This method of infection is held by some observers, who maintain that the woman always escapes infection by the semen, unless conception occurs. Secondary syphilitic manifestations occur during the course of the pregnancy, but the primary lesion is not discovered. It is probable that, owing to the primary sore having been indistinct, or having disappeared by the time that the secondary symptoms were manifested (the occurrence of which suggested a search for the primary sore) failure to find the initial manifestation has resulted, in many cases, in the denial of its occurrence. It is, however, maintained that failure to find the primary lesion is not a proof that such a sore has not occurred. From a large series of observations, undertaken at the Lock Hospital, we are convinced that it is very often impossible to demonstrate the existence of the primary sore on the genitals of women; but we believe that it does occur in all cases, and we are strengthened in this belief by the fact that in every instance under our observation, where the primary lesion was not manifest, indolent enlargement of the inguinal glands could always be detected.

(4) *Infection of the mother by the ovum, or "choc en retour."*—Some observers explain the infection of the mother by affirming that the syphilitic ovum is capable of infecting the mother.

In the cases in which the wife of a syphilitic husband gives birth to diseased children, or repeatedly miscarries, it has been often observed that the woman's health suffers in a marked though indefinite manner; but that for some time she presents no decided manifestations of syphilis. These, however, make their appearance at a later stage, and are attributed to the repeated reception of the syphilitic virus through the fœtus during the successive pregnancies. In another class of cases the symptoms appear in the woman during her first pregnancy. It is stated, therefore, that the ovum, rendered syphilitic by the semen of the father, transmits the disease to the mother; that is to say, the father's disease is communicated not only to the ovum but to the mother as well, and this without any primary lesion necessarily manifesting itself on the person of the latter. The constitutional symptoms are those which first make their appearance.

A French obstetrician, Gardien, in 1824, was the first to call attention to the above circumstances. His statements were afterwards confirmed by Ricord, who asserted that when a man, the subject of secondary syphilis, infects his wife, he does so by causing her to become pregnant.

The subject, however, was brought more prominently before the notice of the profession by Abraham Colles in his work entitled "Practical Observations on the Venereal Disease," and published in 1837. His preliminary remarks are as follows:—"I must state a fact which, though I am unable to explain it, has been forced on my observation by more than five or six instances; namely, that a newly married man, who is himself free from every appearance of syphilis, and every other disease, shall yet infect his wife in such a manner that secondary symptoms shall appear in her a few months after marriage, and these not preceded by any primary symptoms, or by any discharge whatever from the genitals. And though among these secondary symptoms, some raised ulcers shall fix upon the external pudenda of the wife, yet the husband shall very rarely suffer in any manner from these. The husband, when questioned, will admit that at some period within nine months antecedent to his marriage, he had contracted a venereal disease; that he had undergone mercurial treatment by which all his symptoms were removed, and that he had been declared by his surgeon to have been cured. . . . In the ordinary time his wife becomes pregnant, and carries the child until the seventh or eighth month, when abortion takes place. . . . The same fatality attends in the second, third, and perhaps fourth pregnancy. . . . Sometimes the child is produced alive, but in such a weakly and emaciated state that it does not survive more than a few hours; and such often bear unequivocal marks of the venereal disease." *

Colles' observations were followed some years later by those of Bouchut and Hutchinson, and during the last thirty or forty years, many cases illustrating Colles' remarks have been placed on record. It sometimes happens that the woman exhibits secondary symptoms, such as condylomata, roseola, ulcers in the throat, falling off of the hair, glandular induration, etc. In other cases the symptoms are those of the tertiary period. When the symptoms belong to the former category they usually come on at an earlier date, perhaps in the third or fourth month of the pregnancy, and in these cases it is generally noticed that the father's infection was of a comparatively recent date. As stated above, the symptoms in the mother do not always appear during the first pregnancy or immediately after it. She may remain

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* Colles' Works, New Syd. Soc. edition, pp. 252 *et seq.*

apparently healthy, or the symptoms may be of a very slight, ill-defined character, such as more or less anæmia, loss of appetite, transient neuralgia, debility, leucorrhœa, gradual loss of hair, etc. In another group of cases, after subsequent pregnancies, decided symptoms, such as condylomata, syphilitic manifestations of the tongue and hands, throat-affections, etc., make their appearance, and relief from these is to be obtained from specific treatment alone. This mode of acquiring syphilis has been designated by French writers "choc en retour."

Unfortunately for this theory none of the cases which have been brought forward can be said to support it, for although the initial lesion was stated not to be present, still we maintain that the reputed absence does not amount to a proof of non-existence, and the cases were not examined when the disease was quite recent. We have before stated how difficult it frequently is to find the primary sore in women; but in most of the cases which have been brought forward to support the theory of infection of the mother by the fœtus, the alleged absence of the initial sore has rested only upon the patient's statement. Now, although not denying the possibility that the mother *may* be infected by the semen, and so contract syphilis without the existence of a primary sore, and that she *may* be secondarily infected through the ovum, still we maintain that the only method yet *proved* by which the woman can become infected is by *direct* contagion.

We may now pass on to another question, viz., What occurs when the father is syphilitic, but the mother is free, or apparently free, from infection? This may be discussed under the following propositions:—*The father is syphilitic, the mother is stated to be free from syphilis, but the children are syphilitic.* This proposition hinges upon the point as to whether or not a woman can bear a syphilitic child, the syphilis being conveyed to the offspring by the father, without at the same time affecting the mother. The theory is denied by most modern syphilographers, who base their conclusions upon the fact that no undoubted case yet has been brought forward proving that a child suffering from hereditary syphilis has, after its birth, infected its mother with the disease, although we know that these children are capable of infecting other non-syphilitic individuals.

There is no doubt that in a large number of the cases where the mother has been stated to be free from syphilis, the symptoms have been present, but they have escaped detection. But in a small minority of instances this has not been the case, and consequently some observers state that the mother has escaped infection. The objections to the theory that a woman can bear syphilitic children without being infected herself, are really very much stronger than the arguments in its favour.

The former may be briefly enumerated :—

a. Some of the cases have not been accurately observed.

b. The mothers have not been under observation for a sufficient length of time, to be certain that they are not infected. Numerous instances of the alleged escape of the mother are upon record, where subsequently undoubted syphilitic manifestations developed.

c. Treatment of the father alone in these cases fails to prevent the occurrence of syphilis in the offspring ; but treatment of the mother or of both parents has an undoubted influence upon it.

The fact stated above that the mother is never infected by the infant she suckles when the latter has hereditary syphilis, whereas such a child would, in all probability, communicate the disease to a healthy wet-nurse, forms the basis of the generalisation which has been termed "Colles' law." This author sums up his experience as follows:—"The following fact appears to me very deserving of notice: I have never seen or heard of a single instance in which a syphilitic infant (although its mouth be ulcerated) suckled by its own mother had produced ulceration of her breasts, whereas very few instances have occurred where a syphilitic infant had not infected a strange, hired wet-nurse, and who had been previously in good health."* There is also the additional and very important fact that the mother in this case may present no obvious venereal symptoms.

Colles' law has been confirmed by the experiments in which attempts have been made to inoculate syphilis upon the mothers of syphilitic children. In no case were these successful.

It must, however, be admitted that many reliable observers refuse to accept Colles' law as being universally applicable, and they answer with a decided affirmative the question, Can a healthy mother bear a syphilitic child? Kassowitz's statistics appear at first sight to show that an affirmative reply is supported by really cogent facts.† He states that in the Vienna Asylum for Foundlings, out of 400 children with hereditary syphilis 166 had healthy mothers, in 122 cases the mothers were syphilitic, and in the remainder of the cases the condition of the mothers was unknown. He also mentions seventy-six other cases, in forty-three of which the mothers were healthy, in twenty-three both parents were syphilitic, and in ten the mothers alone were diseased. It must, however, be noted that these observations were continued only during the lying-in period. Now this is much too short a time to observe a patient in order to state positively that she is free from syphilis; and, moreover, it is a matter of everyday experience that the birth of syphilitic children frequently occurs during a period of latency in the disease of the mother.

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* Colles, *l.c.*, p. 271.

† "Die Vererbung der Syphilis," Vienna, 1876, pp. 23 *et seq.*

Very many other cases have been brought forward at different times in order to prove that a mother may beget a syphilitic child, without at the same time contracting the disease; but a careful examination of these cases will demonstrate that, owing to want of very vital points in the recorded histories, the evidence rather tends to support Colles' law than to refute it.

Amongst the numerous cases which have been recorded to show the fallacy of Colles' law, we may quote here two, which are generally acknowledged to give the clearest evidence yet brought forward for this purpose.

Guibout* states that he has seen a case where the mother had a child which suffered from hereditary syphilis, and that, whilst suckling this child, four sores appeared on the left mamma, one of which, in the opinion of Fournier, who saw the case, was a hard chancre. Unfortunately, however, Guibout does not give a very clear and thorough history of the case. For instance, he says nothing about the subsequent health of the mother, so we are left entirely in the dark as to whether the axillary glands subsequently became enlarged, and whether a secondary rash appeared. So, too, he does not give any description of the state of health of the child, or eliminate the possibility that it might have contracted syphilis after its birth.

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* Guibout: "Nouvelles Leçons Cliniques sur les Maladies de la Peau," 1879.

The second case is the well-known one observed by Ranke,* which may be briefly stated here. " A man, thirty years of age, was infected eleven years before his marriage, but for nine years previously had been entirely free from any symptoms. Three years before the history was recorded he married, and in the first year of married life his wife, presumably free from syphilis, gave birth to a syphilitic child, which was cured by repeated treatment with calomel. The symptoms which led to the diagnosis of hereditary syphilis are not stated. The mother remained healthy until the birth, at the end of the third year of marriage, of the second child, which exhibited a macular syphilide with syphilitic ulcers in the mouth."

"Whilst the mother was suckling this child, a small fissure upon her left nipple became converted into a hard chancre, which was followed by a roseolar rash, which was cured by inunctions with mercurial ointment. Neither the husband nor the first child showed any syphilitic manifestations since their original attacks. The milk had not been drawn off by a third person."

Here, again, although the case has been well recorded in many particulars, yet there are one or two observations which might have been made, tending to confirm, or not, the diagnosis. Arguing, for instance, that the lesion on the breast was not a primary syphilitic sore, we can say that as there was no note taken of the condition of the glands in the axilla, the lesion may have been a secondary syphilide irritated by suckling. Again, we are not informed whether the first child was suckled or not.

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* Ranke: "Ueber Ansteckung der Mutter mit lues hereditaria durch ihr eigenes Kind."—" Medicinisch-Chirurgisches Centralblatt," 1879.

Even if the lesion was syphilitic, may it not have been derived from some other source? Here we have a man who contracted syphilis eleven years previously, but had had no sign of syphilis for nine years, yet we are to suppose that he infected the ovum. The length of time which elapsed in this case between the cessation of symptoms and the infection of the child make this occurrence, we will not say impossible, but at least very improbable.

The most plausible explanation appears to us that neither child was syphilitic; but that some other disease was mistaken for syphilis, and that the lesion on the breast may have been and probably was specific. We are confirmed in this opinion by many curious cases we have come across where the source of the infection remained for a long time inexplicable, but was ultimately discovered.

Dr. J. A. Coutts, of the East London Hospital for Children, in the "Lancet" for June 9th, 1894, records a case in which he claims that the mother of a child became infected by her own offspring. His account is as follows:—

"An infant, aged eight months, was first seen by me at the Shadwell Children's Hospital on November 7th, 1892. For a fortnight previously she had been treated by Mr. Cursham Corner for congenital syphilis, and was by him transferred to my care. The father and mother had been married for ten years, and had five children. The four eldest were all living and were healthy, and, as far as could be gathered, there had been no snuffles or rash or any syphilitic manifestation in any of them. The father came to see me at the hospital. Although divining the cause of my sending for him, his manner was open and straightforward, and what he stated inspired confidence. Before marriage he had been with 'loose women.' His fallings from virtue, however, had been but seldom, perhaps numbering half a dozen altogether, and since his marriage he had kept perfectly 'straight.' He had never to his knowledge had any venereal complaint, and on examination presented no outward manifestation of syphilis. There was also an entire lack of any specific taint in the history of the mother. The infant was born at full time and was seemingly healthy; it had never seemed, however, as strong as any of the other four. At three weeks of age it had snuffles, and simultaneously with this, or very shortly after, a slight red rash on the buttocks. The rash only lasted a week or so, but the snuffles persisted for some weeks longer. The illness altogether was so slight that the mother did not seek medical advice for it. At ten weeks of age the child was vaccinated, and there had never been, nor is there now, in the scars anything unusual about the vaccination punctures. Lymph had not been drawn off from the vesicles by the surgeon who operated. With the exception of the slight rash at three weeks of age there had been no sore about the child—on this point the mother was absolutely positive—until the present illness. This commenced about the beginning of September with a 'cold in the head,' followed in a short time by sores on the buttocks and mouth. The child presented the typical aspect of congenital syphilis. There was marked snuffling, with nasal discharge, and some crusting of the inner surfaces of the nose. The upper lip was stained and excoriated by the nasal discharge. There were a few crusts on the surfaces of both lips, with marked vertical fissuring of these last, and the angles of the mouth were prolonged into ulcerous cracks. The inner surfaces of the lips and buccal membranes were affected with some slight superficial ulceration, and there was a small ulcer on the tongue, and there were what were seemingly mucous plaques on the soft palate. The posterior cervical glands were slightly enlarged, and there was a doubtful patch of craniotabes over both occipital bones. The skin was muddy-looking and inelastic. Over the buttocks was a sparse, rusty-coloured, scaly eruption, with infiltration of the skin involved, and in one or two places evidence of past and present ulceration. Around the anus were some slightly raised mucous tubercles. The spleen and liver were both enlarged, and the child was somewhat wasted, this last condition having been intensified during the current illness. About a week after the child's mouth and lips became affected, the mother, who had continued to suckle the infant, noticed two small sores about the right breast nipple. These had increased gradually in size until, on my seeing them for the first time on November 7th, the larger of the two had gained the diameter of a sixpenny piece. This last was situated above the nipple, and the smaller one just below this last and externally to it. Both sores presented the characters of shallow ulcers on the surface of the areola of the nipple, and the larger one encroached slightly on the skin beyond. They were hard and firm to the touch, with well-defined borders, which felt of a somewhat cartilaginous consistency, and could be well isolated from the surrounding breast structures. The glands in the right axilla were enlarged. There was complaint of sore throat, and on examination the pharynx and tonsils were found to be injected and the sites of some slight shallow ulceration. To me there seemed to be a faint roseola over the chest, but neither skin nor throat presented anything that was definitely distinctive.

"A fortnight later all the symptoms were intensified. The sores on the breast had increased in diameter. The border of the upper and larger one seemed slightly raised by epithelial overgrowth, and this led to an appearance of deeper cupping over it than was really present. The surface was kept moist by a thin, scanty, serous secretion, and the same sharp demarcation from the surrounding tissues was as marked as before. The throat was now the seat of a marked and typical syphilitic ulceration, and there was a deep ulcer along the right margin of the tongue. The body and flexor surfaces of the limbs were now covered with a profuse, rusty-coloured, coarse eruption, unmistakably specific. There had been marked loss of hair and severe periosteal pains in spite of the iodide of potassium, which had been administered with mercury for the past fortnight. My colleague, Dr. H. B. Donkin, and the resident medical officer, Dr. E. E. Ware, were kind enough to see the patients along with me at this visit. They both unhesitatingly agreed that the infant presented all the usual signs of congenital syphilis, and that the throat and rash of the mother were undoubtedly syphilitic, and that the lesions on the breast presented the characteristics appertaining to primary sores.

"I saw no more of the cases until January 16th, 1893, when the mother attended again with the child, in response to a letter from the out-patient sister. The child had much improved, but there was still snuffling and staining of the upper lip and chin, and there were some mucous tubercles around the anus. The mother, in the interim, had been very ill and obliged to take to her bed for some time. Periosteal pains and sore-throat had been very severe, and there had been much general disturbance of health. Nearly all her hair had now come off. The sores about the nipple had by this time healed up. The lower one had disappeared, but could still be felt as a small cicatrix under the skin. The upper one had much diminished in size, but was apparent as a small mass of scar tissue, flush with the surface of the breast, glistening and somewhat puckered on its exterior, and could be sharply defined from the underlying structures. The rash was disappearing, and some of its former sites were marked by dusky pigmentation. There was still ulceration of the fauces and tongue, and the posterior cervical glands were distinctly enlarged."

In our opinion Dr. Coutts has quite failed to prove that this case is an exception to Colles' law, for the following principal reasons:—1. The total want of evidence of any syphilitic infection in the father. We admit that this evidence is not necessary, but taken with the other contra-arguments helps to give weight. 2. The previous birth of four healthy children. 3. Failure of evidence to prove that the rash which the infant suffered from when three weeks old was due to hereditary syphilis. 4. Absence of proof that the symptoms which commenced in September were due to hereditary and not to early acquired syphilis. The whole history of the case points to an early acquired infection, and, taking the appearance of the secondary symptoms in September as a guide, it would seem that this infection took place about the time the child was vaccinated. We cannot admit that, because Dr. Coutts failed to find the primary sore, this is evidence of its never having existed.

In order to show what a long time and how very carefully the patient must be kept under observation in order that the recorder may not fall into error, and so affirm that syphilis is absent in the mother when it is present, I will quote the following case observed by Dr. Charrier and cited by Fournier in his book on "Syphilis and Marriage." "In 186— I attended Madame X——, during the last six months of a pregnancy, which was uncomplicated except by frequent nausea and sickness. On the 6th of April this lady was confined of a little girl, well formed, and of healthy appearance, weighing about seven pounds. The afterbirth came away spontaneously in twenty minutes. The placenta was healthy. The subsequent progress was satisfactory.

"Toward the tenth day, the child had a slight fever, green stools and erythema of the buttocks. The fifteenth day, an eruption appeared upon various parts of the skin. It very soon took on the characteristics of a syphilitic ecthyma. On the 15th of May, thoroughly typical mucous patches manifested themselves around the anus and the vulva. Treatment, consisting of baths of corrosive sublimate and frictions with mercurial ointment, rapidly overcame the various symptoms.

"Nevertheless, the mother continued to suckle her child. She has not ceased to have good health; and she has never had any symptom which could be set down to syphilis. I will add that upon questioning her as minutely as possible, I could not discover any specific symptoms in the antecedents of this lady. When she ceased to suckle (fourteen months later), she was a little anæmic and complained of pain between the shoulders. She recovered herself rapidly, and that without any medicine, simply by the fact of her having ceased suckling the child. The father, questioned by me upon his antecedents, had admitted that four months before his marriage he had contracted an infective chancre; and that even at the time of conception he was still affected with various secondary symptoms. (Mucous patches, around the anus, the same on the tonsils, and scabs scattered about the scalp.)

"So, I found myself in the presence of—1st, a syphilitic father, who still retained symptoms at the moment of conception of his child; 2nd, of a syphilitic child who had commenced to exhibit undoubted syphilitic manifestations on the fifteenth day after its birth; 3rd, of a mother free from infection, appearing never to have shown any specific symptoms before her confinement, and who had suckled her syphilitic child during fourteen months without contracting the slighest contagious symptom.

"This fact overthrew all my notions about hereditary syphilis, and especially my principal belief that, if a child be born with a syphilitic taint, it is certain that the mother has been infected. I have established in a former memoir there is *no syphilis in the child without syphilis in the mother.*

"During six years I was able to watch the health of this family. Now, in the first place, the child submitted to the treatment has survived. Although somewhat lymphatic it has always continued to enjoy good health; in the second place, the father, who has rigorously followed a prolonged treatment, has never presented since then specific symptoms; in the third place, the mother, scrupulously watched, has never ceased to enjoy good health, with the exception of some slight ephemeral indispositions.

"I must admit that this case (followed by me day by day, so to speak) strongly shook my previous convictions. I was preparing even to publish it, when, in the month of October, 187—, Madame X—— came to consult me about a tumour on the right arm. This tumour, underneath the skin, immediately above the olecranon, was about the size of a pigeon's egg, it was hard at the circumference and base; on the contrary it was soft in the centre; it has never given her pain; and it was then indolent even to palpation and to pressure. In those places where there was softening the integuments presented a brownish-red colour. I watched this tumour with great care, and became convinced that it could not be accounted for except upon the supposition that it was a *syphilitic gumma.* Ten days later the tumour opened towards the centre. A liquid came out which was formed of two distinct components — the one transparent and gelatinous, like mucilage; the other purulent. When the tumour was emptied I perceived its floor was greyish as if putrelaginous. The opening quickly enlarged and presented a sinuous outline, clearly defined and punched out edges. The base of the tumour still remained hard. These features, and this evolution, confirmed me in my original view. I diagnosed a gummatous tumour, and indeed I do not believe that any other diagnosis could have been made.

"Treatment by iodide of potassium, at first in increasing then in decreasing doses. Rapid improvement took place, and the lesion was cured in less than three weeks.

"The nature of the tumour was evident, for with what other lesion could I have confounded it? With an anthrax? With an abscess? The absence of pain, of inflammatory symptoms, the objective appearance of the lesion, its morbid evolution, excluded such hypotheses; and, moreover, the rapid cure effected by iodide of potassium, thoroughly demonstrated—at least, so I think—that I had to do with a tertiary syphilitic lesion.

"It is certain then that Madame X—— had been infected at some time, either before or during her pregnancy; but her syphilis had remained latent and anomalous. It had passed unperceived by the patient and by myself; finally, it had become revealed in an undoubted manner *six years later* by the serious but unexpected outbreak of a tertiary lesion.

"To sum up, this fact, which at first appeared to overthrow the theory that I have held so long (in common with MM. Cullerier, Notta, and other observers), namely, that *every syphilitic child is born of a syphilitic mother;* this fact, I say, adds another argument to the theory in question, and confirms it absolutely."

The case just detailed, taken in conjunction with many other similar cases, together also with the fact that the mother of a child suffering from hereditary syphilis cannot be inoculated with syphilis either by her child or any other source, takes away the most powerful argument in favour of the belief that the father alone can be the source of the syphilis in the child.

Whether in these cases the syphilis is so modified that its effects are not made manifest, or when manifested, the resulting lesions are so slight as to escape notice or appear at a very late period, the fact remains that neither direct infection of the ovum by the father, nor infection of the mother by her syphilitic offspring, has been proved.

HEREDITARY SYPHILIS FROM THE MOTHER.

The mother is infected before conception.—If the mother has secondary syphilis during gestation, the child is very rarely born healthy.

When the mother has contracted the disease some time previously, the transmissive power decreases with time; but this varies in different individuals.

The mother is infected during gestation.—If a healthy woman after impregnation by a healthy man contracts syphilis, the ovum may or may not become infected, the poison, in the former case, being conveyed by the placental circulation. As a general rule, the later in gestation, after the sixth month, that the infection occurs the more likely it is that the child will escape, but the period of pregnancy in which a woman may become infected, and the child not attacked, is uncertain, and cases have been recorded where the child has become infected as late as the seventh and eighth months of intra-uterine life.

When a woman, the subject of recent syphilis, becomes impregnated, abortions are very apt to occur. In other cases, several children are born showing evidences of hereditary syphilis, but in the course of time the woman may give birth to a child apparently in perfect health. Sterility is sometimes observed in women the subjects of inveterate syphilis. When the tertiary stage has been reached and the woman becomes pregnant, the probabilities are the same as when the disease is in the same stage on the father's side, hereditary transmission never having been proved to have occurred when this stage has been reached.

Transmission may certainly take place when all symptoms are latent in the parents; such latency being either a spontaneous phenomenon or the result of treatment. When a long period has transpired since the infection of the parents, no definite prediction can be made; as a general rule, infection within three years renders transmission certain; after that time much depends upon the health of the parents, and upon whether a *proper course of treatment* has been adopted, but even under apparently favourable circumstances, transmission may take place ten years after infection; such cases, however, are decidedly exceptional.

Should impregnation take place when the disease is very marked and recent in one or both parents, early abortion is the most probable result. Succeeding pregnancies will probably terminate in a similar manner; after a while perhaps, a still-born seven months' child, presenting many symptoms of inherited syphilis, will come into the world, and after a due interval a child may be born alive, but dies soon after birth. Should the woman again become pregnant, she may give birth to a child apparently healthy but exhibiting syphilitic symptoms when a few weeks old. Such results indicate the gradual extinction of the disease, the eventual completion of the process being demonstrated by the fact that the woman gives birth to a perfectly healthy infant. This result is almost always attainable if systematic treatment is adopted. If a woman who has given birth to several syphilitic children is subjected to a proper course of mercury, the good results of the treatment will certainly be exhibited in any succeeding pregnancies, the children being almost free from disease, or in many cases appearing perfectly healthy. If, however, the treatment is imperfect, there may be some improvement in the first child born afterwards, but the disease will probably reappear in any succeeding children.

As we have stated, the date at which the mother acquires syphilis during her pregnancy influences the course of the phenomena in the offspring. If the infection take place between the fourth and seventh months of pregnancy, the symptoms will in all probability appear during the first few weeks of the child's existence, and will be of a severe character. If the disease be acquired by the mother during the second or third month, abortion is likely to occur; but if the child is carried to the full term, the constitutional manifestations may be expected to be less severe and later in their appearance than in the former case.

Transmission of hereditary syphilis to the second generation.—The question as to whether a woman herself the subject of hereditary syphilis, and not known to have acquired a fresh infection, can transmit this taint to her offspring, must be answered in the negative, as in all the cases brought forward to support this view it has been impossible to prove the absence of an acquired taint.

Latency of the Symptoms of Hereditary Syphilis.—Reference has been already made to the fact that the children of syphilitic parents often show no signs of the inherited disease at birth; its presence, however, is sooner or later manifested by unmistakable symptoms. The interval is sometimes considerable, and this characteristic of latency constitutes one of the differences which exist between the acquired and the hereditary forms of the disease. It may be laid down as a general rule that the period at which hereditary symptoms manifest themselves depends upon the condition of the disease in the parents. The more recent the infection and the more marked the evidences thereof, the earlier and the more decided will be the manifestations in the progeny. Abortions, miscarriages, death of the fœtus, a child born with marked symptoms, another with mild symptoms, are, so to speak, measures of the intensity or otherwise of the parent's disease. If the disease in the father or mother be almost extinct at the time of impregnation, the child, when born, may be to all appearances perfectly healthy, and may either remain so, or else develop symptoms of syphilis some months or years afterwards.

In a large majority of cases, the symptoms of hereditary syphilis appear either at birth or some time during the first three months. It is only in exceptional cases that the outbreak of the symptoms is deferred until the fifth or sixth month. Diday's statistics of 158 cases show that in 146 the symptoms appeared during the first three months, and that in 86 they appeared before the end of the first month. In 124 cases closely observed by Kassowitz, the symptoms in every instance were developed during the first three months—in 66 in the first month; in 40 in the second; in 18 in the third month.

When the manifestations of syphilis are delayed beyond the third month, it may generally be anticipated that the complaint will assume a comparatively mild form, and will readily yield to treatment. Many cases have been placed on record showing that the outbreak of the disease may be deferred till a much later period. Ricord described a case in which the patient was seventeen years old when the first symptoms showed themselves. He has also mentioned cases in which forty (!) years passed before the symptoms appeared.* There must, however, always be considerable doubt about cases of this kind. In a case recorded by Bouchut, the patient, a girl, had reached ten years when symptoms showed themselves in the form of destructive ulceration of the nasal septum and perforation of the palate. In many cases of alleged late outbreak, it is very probable that the signs which existed in early life were overlooked or misinterpreted; and considering the many channels by which the poison of syphilis may gain access to the system, it is possible that in a considerable proportion of the cases, the symptoms were really those of the *acquired* form of the disease. That, however, the symptoms may occasionally be latent for several years has been placed beyond dispute. Zeissl noticed a case in which the patient was fourteen years of age when the symptoms appeared. He regards it as possible that "the children of a father, the subject of latent syphilis, may appear quite healthy at birth and may remain so for some years, when gradually gummatous infiltration becomes developed in the skin of various parts (syphilitic lupus), and is soon followed by ulcerative destruction of the soft palate and nasal mucous membrane (ozæna, etc.), and diseases of the bones, symptoms which in former times were often regarded *as manifestations of scrofula.* Zeissl separates the hereditary syphilis, which appears in a secondary form soon after birth, from that which supervenes later on and presents tertiary manifestations; the former he describes as congenital syphilis; the later, as latent hereditary syphilis. The statistics of Diday and Kassowitz have shown that the latency of the symptoms is an exceedingly rare phenomenon. Diday doubts the possibility of syphilis remaining latent during many years, and bursting forth only at an adult age. He adds, "From the moment that the idea of hereditary syphilis remaining latent till the age of twenty or thirty was adopted, this dogma might evidently serve as a cloak for all delinquents. Sons would then exculpate themselves without ceremony at the expense of their fathers. . . . The social and moral consequences of such a doctrine are evident enough."*

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* Quoted by Diday, "Infantile Syphilis," New Syd. Soc. Transl., p. 115.

SYMPTOMS OF HEREDITARY SYPHILIS.

When the fœtus dies *in utero* and is prematurely expelled, it is found to be more or less decomposed, and often to such an extent that nothing peculiar can be distinguished. The epidermis is softened, raised into bullæ, and detached over large portions of the surface. If the child is carried to the full term, and dies before delivery, the body will be found much emaciated, but traces of syphilis on the surface may be either present or absent. But even if cutaneous symptoms be absent, certain changes in the epiphyses of the long bones, and in the cartilages of the ribs, are invariably present. These consist of thickening of the periosteum, the formation of osteophytes, and discoloration and softening of the spongy tissue of the bones in the neighbourhood of the epiphyses. Changes are also frequently found in some of the internal organs, especially the liver and lungs. In the former, diffuse gummatous infiltration is generally seen; in the latter, white hepatization is the most characteristic appearance.

When a child the subject of hereditary syphilis is born alive, the appearances vary in different cases. In a large proportion of instances, the child appears healthy and vigorous; in another class, the children are puny and delicate, but no decided symptoms appear until several days or weeks have elapsed; while in a third and less numerous class, the children are born with evidences of the disease upon them. Children belonging to this last class of cases, and those in whom the disease makes its appearance soon after birth, are generally the progeny of parents whose infection is of recent date.

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* Diday on "Infantile Syphilis," New Syd. Soc. Transl., pp. 114, 115.

The most obvious symptoms in hereditary syphilis are connected with the skin and mucous membranes. But before any eruption appears, there are in many cases certain peculiar symptoms by which the hereditary taint may be recognised. The children are usually small and undeveloped, and have an aged look; the skin is loose and wrinkled, it has no healthy transparency, but is dull and of a yellowish or light coffee-coloured tint, which becomes more decided as time goes on. The discoloration is sometimes uniform, but in most cases the tint is especially marked in certain spots, viz., the forehead, eyebrows, nose, and chin; the depressions on the face being comparatively free. Other co-existing symptoms are—more or less puffiness of the integument, emaciation, and weakness. The hair is dry and scanty, the eyebrows and eyelashes may be almost absent, and the nails are ill-developed. Such are the usual appearances in those cases in which there is no decided eruption.

A child presenting signs of syphilis at birth is generally puny and of small size; such children are often born before the full time. The weight is generally below the normal, even when the full term of gestation has elapsed before birth has taken place. The face looks wasted, the integument is thrown into folds, and the expression resembles that of old age. The nostrils, lips, and angles of the mouth are scored by fissures, and the submaxillary glands are hard and swollen. The skin generally is either dry and scurfy, or has a shining, waxy appearance; the sallow or *café au lait* tint is well marked, and the discoloration is not affected by pressure. Various eruptions are found on the skin. The most serious and prominent of these are the vesicles or bullæ of pemphigus, most frequently found on the soles of the feet and palms of the hands. Some of these vesicles are apt to become ruptured during parturition, and excoriated patches remain. Macular and papular forms of eruption often co-exist. Another and a pathognomonic symptom is swelling of the mucous membrane of the nose, accompanied by a profuse discharge from the nostrils. Fissures (rhagades) of the anus, and condylomata around that orifice are frequent accompaniments of the above-mentioned symptoms, several of which require a more minute description.

Affections of the Skin.—*Syphilitic pemphigus* occurs in some cases, and is one of the earliest and most marked symptoms of the inherited disease. It may be found on the child at birth, or may appear a few days later, generally within the first week of birth. The seat of the bullæ (the palms and the soles) is a distinguishing characteristic. The eruption sometimes spreads to the dorsal surfaces of the hands and feet, and to the fingers and toes and thence to the forearms and legs respectively. The lower part of the face may be attacked, but the trunk is rarely involved except in very severe cases. The development of the eruption is preceded, especially on the hands and feet, by a violet tint of the skin. In from two to three days vesicles, containing a serous fluid, are formed on these discoloured patches. The bullæ vary as regards their size, form, and number. The smallest are about equal to a hemp-seed. They enlarge after their formation; the largest may attain the size of a small nut, and they often become confluent on the hands and feet. Their contents subsequently become milky and yellowish, and sometimes contain blood as well as pus. In cases where the eruption takes place some time after birth, the vesicles are smaller and more disseminated, and are not so perfectly formed as when the child is born with the rash present.

The eruption runs a somewhat rapid course, and is often accompanied by febrile symptoms; the child constantly cries and refuses the breast, and keeps the wrists firmly flexed. In three or four days after their appearance most of the bullæ burst and their contents escape; the surface is then covered with scales of epidermis and crusts; or they may dry up, forming greenish yellow scabs, which, when detached, leave more or less deep, spreading, and unhealthy ulceration exposed. As a general rule, a child thus affected dies in a few days from exhaustion, due to diarrhœa, etc. Life, however, is sometimes prolonged under treatment, and the bullæ disappear, to be followed by a second eruption, which generally proves fatal.

With regard to the time at which the eruption may appear in those cases in which the child is free from it at birth, this, as a general rule, is some time during the first three days; but in exceptional instances its appearance has been postponed to the eighth week. The earlier it appears, the more decided are the other symptoms with which it is associated.

In the acquired form of syphilis there is no truly vesicular eruption, and much controversy has taken place as to whether congenital pemphigus is always to be regarded as a positive sign of inherited syphilis. It is stated that a similar eruption is sometimes found in children not the subjects of hereditary syphilis but much enfeebled from some other cause. In these latter cases, however, the bullæ are scattered over the general surface; whereas in syphilis they are for the most part confined to the hands and feet, and are always associated with other symptoms of the disease. It has also been noticed that the bullæ of non-syphilitic pemphigus are larger, less disposed to become confluent, and exhibit a greater tendency to desiccation. The spots on which they appear are less infiltrated and are rose-red, not violet in colour. The crusts are thin and yellowish, and their detachment reveals neither excoriations nor ulcers.

It may be confidently asserted that the bullæ of pemphigus appearing on the parts indicated, at or soon after birth, are unequivocal signs of hereditary syphilis. In many cases of this character we have noted that the mother or both parents were obviously syphilitic.

The remaining cutaneous manifestations of hereditary syphilis more or less resemble those which occur in the adult, but they differ in their duration, in their order of sequence, and in other respects. They may, however, be similarly classified. Thus they take the forms of roseolar, papular, and of pustular eruptions, and of gummatous infiltration. As a result of the delicate condition of the skin in infants and of the manner in which it is exposed to moisture, the cutaneous lesions are, for the most part, less dry and less firm than those in adults; so the disposition towards the formation of condylomata is especially marked. Owing to the activity of the general processes of nutrition, the eruptions are rapidly developed and large portions of the surface are soon affected. The same child often exhibits various forms of eruption at the same time, thus roseola frequently co-exists with papules and with the bullæ of pemphigus.

Roseola syphilitica may appear either at birth or soon afterwards in the form of round defined spots, about a third of an inch in diameter, and of a bright red colour, sometimes with a tinge of violet, but rarely with a coppery hue, as is seen in adults. Its eruption is often accompanied by coryza and by other cutaneous symptoms, such as fissures about the mouth and anus, condylomata, etc. At first the spots disappear on pressure, but subsequently they remain, owing to extravasation of the colouring matter. This form, resembling the roseola of acquired syphilis, is somewhat rare; but bright coppery-red erythematous patches are more commonly found. These patches usually commence on the buttocks, and extend downwards on the back and inner sides of the thighs and upwards to the loins and the lower part of the abdomen, and spread from these to other parts, their development occupying several days. They are not elevated above the level of the skin, unless considerable exudation occurs, in which case the papular form of eruption may become developed. Some amount of desquamation may take place, and cracks or fissures are sometimes formed in severe cases.

The diagnosis is for the most part easy; the eruption is sometimes very slight, but it becomes more marked when the child cries and struggles, and when it is brought into a warm room. Simple intertrigo does not appear in well-defined patches, and is limited to the part covered by the napkin or to the folds of the skin. Snuffles and other evidences of syphilis always co-exist.

The eruption is sometimes of a diffuse character, the infiltration taking place principally in the subcutaneous connective tissue. The face and the lower extremities are the parts usually affected. Patches of skin are raised above the level of the surrounding portions and become darker in colour. As a result of tension these patches are smooth and shining; the movements of the affected part are impaired, and any natural folds become obliterated. When parts of the face are thus infiltrated, the expression of the countenance is changed, and the movements of the various muscles are impeded. The patches sometimes become fissured or ulcerated, and constitute the preliminary stages of mucous papules.

The papulo-squamous syphilide frequently co-exists with the roseolar rash, and consists of rounded papules from an eighth to half an inch in diameter, slightly squamous and pinkish at first, but fading later to a fawn colour.

The small papular syphilide in the acuminate form is far less common than the preceding; but the two eruptions may co-exist. In a few cases small brownish-red spots have been observed on children at birth or during the first few weeks, the parts especially affected being the palms and soles, the sides of the thorax, the neck, and the forehead. The papules are either disseminated or collected together in groups, and, where the eruption is very marked, considerable exfoliation may take place. This form of syphilis is usually obstinate and chronic in its course, and indicates a severe type of the disease. Other symptoms invariably co-exist.

Moist papules, mucous tubercles, or condylomata lata.—Eruptions of this kind are frequently seen in hereditary syphilis. They are developed from flat papules, which originate either from healthy portions of skin, or, more frequently, from patches of roseola, as a result of increased exudation. This modification of the ordinary papule is especially apt to occur where the integument is thin, and wherever moisture is normally present, as, for example, between folds of skin and where the skin is continuous with a mucous membrane. These papules project above the level of the skin; they are for the most part roundish in form; some are minute, others measure half an inch or more in diameter. Their colour depends upon their situation, and varies from greyish-red to dark red. Moist papules are so called because of the condition of their surface, which becomes eroded or even ulcerated, and is covered by a yellowish viscid fluid. Their condition is much aggravated by inattention and want of cleanliness. The secretion often forms crusts or scales, the detachment of which exposes an ulcerated bleeding surface. Mucous papules vary much in number, and they appear on many portions of the body, their most frequent seats being the perineum, close to the anus, the neighbourhood of the lips and nostrils, the umbilicus, the groins and axillæ, the buttocks, scrotum or labia, the popliteal space and inner aspect of the thighs, between the toes, etc. They constitute the most characteristic eruption of hereditary syphilis and are pathognomonic of the disorder.

The scales and crusts which are often found on the bodies of children affected with hereditary syphilis are the remains of papules. They are sometimes seen on the palms of the hands and soles of the feet. There is, however, in children, owing to the soft and moist state of the skin, far less tendency than in adults towards furfuraceous changes. Vesicular syphilides are very rare in the hereditary form of the disease, and do not need any description.

Pustular eruptions occur at an early stage, and take the forms of acne, impetigo, and ecthyma. Their appearance indicates a severe type of the general disorder. The acneiform pustules are developed from minute papules, and are most frequently seen on the chest, the buttocks, and backs of the shoulders. The little pustules sometimes burst and give rise to small crusts. The pustules resembling ecthyma are larger and appear later on, and are generally seen on the buttocks and lower extremities. Each pustule is developed from an infiltrated base, and often contains blood as well as pus. Crusts are formed, and their detachment may give rise to deep and serious ulceration. The pustules of impetigo are seated on an infiltrated base and are surrounded by a coppery-red areola. The eruption often becomes confluent and crusts form, the detachment of which reveals more or less loss of substance. The hairy scalp, the face, the thorax, the axillæ, and the groins, are the parts usually involved. The ulceration is often of a serious character and causes much pain and suffering. Syphilitic impetigo is distinguished from simple impetigo by the infiltrated bases of the pustules and the coppery-red colour of the areolæ.

The *nails* are occasionally affected in cases of hereditary syphilis; onychia being less common than paronychia. The appearances in both forms resemble those of the same affections in adults. A few cases are on record in which the nails of all the fingers and toes became atrophied and detached; and this process has been known to take place several times before a normal condition was established. When only the parts surrounding the nail are red and swollen, the process generally subsides without causing detachment. These affections of the nails, occurring in infancy, are pathognomonic of hereditary syphilis.

Tubercular eruptions and gummatous ulcers are rarely seen before the sixth month, and they usually follow other forms of cutaneous eruptions. Nodules appear at various points on the surface of the body, and gradually increase in size. Their subsequent course resembles that of similar growths, the result of the acquired form of the disease. Absorption rarely takes place; disintegration followed by ulceration is the usual course. The process is tedious, and the sores may keep open for long periods. When the gummata are situated over a bone, periostitis and caries or necrosis are very apt to become induced.

Affections of the Mucous Membranes.—Various portions of the mucous membrane are frequently affected in cases of hereditary syphilis; lesions accessible to observation occur on the lips and in the mouth, throat, and nose, and are in many cases the most prominent manifestations of the complaint. The parts of the mouth and throat most often involved are the lips, the angles of the mouth, the inner surface of the cheeks, and the mucous membrane of the hard palate. Next in order of frequency come the pillars of the fauces, the tonsils, and the tongue. The lesions consist of excoriations, fissures, mucous patches, and ulcers. Fissures of the lips are frequently seen, involving both the mucous membrane and the skin, and partly concealed by crusts of blood and purulent discharge. They cause great pain and distress, especially when the child cries or attempts to take the breast.

Mucous papules are also frequent about the lips and the angles of the mouth, and on various portions of the mouth, throat, and tongue. They take the form of flattened, roundish elevations, much paler in colour than the surrounding mucous membrane, which is generally redder than usual. The pearly white covering of these patches may cause them to be mistaken for aphthæ in process of healing. The eruption in aphthæ, however, is not elevated, and after the exudation has separated, minute depressions, but no ulcers, are left. Moreover, the aphthous eruption is speedily developed and soon subsides. Owing to the moisture by which they are surrounded and the constant movements of the parts, the papules rapidly become converted into ulcers, some of which soon heal, while others tend to increase in size. The angles of the mouth, the tongue, the inner surface of the cheeks, and the gums are especially prone to be thus affected. Ulceration of the pharynx is far less frequently met with. In severe cases, the ulceration of the gums sometimes extends to the subjacent bones, inducing caries or necrosis, and if the ulcers become confluent, the process is apt to spread to the hard and soft palate. These lesions are always accompanied by corresponding affections of other parts—*e.g.*, the nose, the larynx, and the intestines. Under such circumstances, it becomes almost impossible to feed the child; diarrhœa sets in, and death occurs from exhaustion.

The *diagnosis* is for the most part easy; aphthæ or thrush is the only affection which at all resembles the lesions due to hereditary syphilis. In thrush there is a distinct white coating, or many white patches resembling curdled milk, and easily removable. The subjacent mucous membrane is reddened and swollen, but not ulcerated.

It must never be forgotten that the secretion from these mucous papules is highly contagious. The greatest care must, therefore, be taken to prevent the disease from being communicated by the child to other persons. The mother alone should be allowed to suckle the child, and if she be unable to do so, it must be artificially fed. All bottles, cups, etc., used for this purpose must be kept scrupulously clean.

An affection of the mucous membrane of the nose is one of the earliest and most marked symptoms of hereditary syphilis. It often precedes the cutaneous manifestations, and its existence is sufficient to establish the diagnosis. The first indications of this coryza are redness and swelling of the nose, externally and internally. After a few days, a serous or mucous discharge flows from the nostrils; this increases in quantity, becomes thicker, purulent, and sanious, and emits an offensive odour. The child's breathing soon becomes embarrassed, and is attended by snorting and snuffling, owing to the swollen state of the mucous membrane and the formation of crusts. The nostrils and lips are scored by fissures, which readily bleed, and cause much pain and distress to the child. The respiration becomes more and more impeded, and takes place only through the mouth. This difficulty, coupled with the soreness of the lips, causes the child either to refuse the breast or to relinquish the nipple after a few attempts at sucking. The child, therefore, soon becomes weakly and emaciated. Removal of the crusts exposes ulcers, more or less deep, which in severe cases may involve the cartilages and the bony framework of the nose. Caries and necrosis of these bones, perforation of the septum, flattening or depression of the bridge of the nose, are the consequences which result in severe cases. Complications in other organs are prone to occur. Sometimes the mischief spreads to the larynx, in which case the voice becomes hoarse, husky, and stridulous, or even extinct. Bronchitis, pneumonia, and obstinate diarrhœa sometimes supervene and accelerate a fatal issue.

There can seldom be any difficulty in the *diagnosis* of this syphilitic coryza. Its rapid progress and serious character, the swelling of the mucous membrane, the profusion of the discharge, the crusts and fissures in the nostrils, and the ulceration are sufficient to distinguish it from ordinary coryza. In many cases the coryza is accompanied by some form of eruption.

The other manifestations of hereditary syphilis which remain to be described are those connected with the eyes, the teeth, the ears, the bones, and various internal organs.

Iritis and Keratitis are the principal affections of the eye in hereditary syphilis. The appearances in this form of iritis resemble those of the same affection in adults the subjects of syphilis. The inflammation pursues a chronic course, and the symptoms generally are far less acute than those of iritis due to non-specific causes. They have been observed in a child only a few weeks old; in twenty-three cases collected by Mr. Hutchinson, the mean age was five months and a-half, the ages varying from six weeks to sixteen months; of these infants sixteen were females. The symptoms may, however, appear as late as the tenth year. In the case of young infants, other symptoms, such as coryza, condylomata, ulcers and fissures about the mouth and anus generally co-exist. It should be borne in mind that the symptoms of the iritis are sometimes so slight as to be entirely overlooked until the pupil is adherent or even occluded. In the majority of cases only one eye is affected. When the symptoms are slight, recovery may be expected under mercurial treatment, but in severe cases adhesions of the iris and irregularities of the pupil often remain. Congenital cataract has been noticed in a few cases of hereditary syphilis.

Interstitial Keratitis or Parenchymatous Keratitis is generally one of the late affections of hereditary syphilis, a large proportion of the cases occurring between the ages of seven and sixteen years. It is comparatively seldom met with in infancy and early childhood; and is a very rare disease in adult life.

The middle and deeper structures of the cornea are affected, and frequently the iris and ciliary body participate in the inflammation.

The inflammatory manifestations differ according to the degree and intensity of the disease. In some instances there may be only a trifling injection of the ciliary vessels; but in more severe cases the inflammatory symptoms will be more marked.

Parenchymatous keratitis seldom occurs without the co-existence of a peculiar condition of the permanent incisor teeth, which will presently be described. The remains of other previous lesions due to hereditary syphilis can also frequently be detected.

The affection usually begins with some irritability of the eye and dimness of sight; and upon examining the cornea of the affected eye it will be noticed that there is a diffuse haziness near its centre, and frequently there is a salmon-coloured patch of vessels at the corneo-scleral margin.

If this haziness or opacity is examined more closely, it will be seen that it consists of cloudy dots which occupy the parenchyma of the cornea. These dots are at first separate and distinct, but sooner or later become confluent, so that when the disease has reached its height, the whole of the cornea, except a very narrow rim at the periphery, is more or less opaque, presenting a "ground glass" appearance. At this stage, there is generally a zone of ciliary injection, and accompanying it, intolerance of light and pain in the eye and orbit.

After some weeks the other eye is usually attacked in the same way; but the progress in the second eye is usually more rapid, and the patient may become almost blind.

In the course of time, however, especially if suitable treatment is adopted, the opacity begins to clear up in the eye which was first affected, and later on both corneæ almost, or entirely, regain their normal transparency. Some cloudy patches, however, generally remain for an indefinite period; in fact, it is the exception for vision to be entirely regained.

In some cases, after the ground-glass stage has set in, a more severe state of inflammation may supervene. The whole cornea assumes a pink or rosy tint from the development of vessels in the parenchyma.

Ulceration very rarely occurs, though in these severe cases the epithelial layer of the cornea is generally implicated, and loses its polished, smooth appearance.

It may be noted here that the occurrence of parenchymatous keratitis and the peculiar notching of the upper incisors presently to be described, form a group of symptoms by which hereditary syphilis can be diagnosed with absolute certainty.

The Teeth.—Of late years much attention has been drawn to the state of the teeth in cases of hereditary syphilis, especially by Hutchinson. It has long been known that various diseases of childhood, notably tubercular disease, certain eruptive fevers and ulcerative stomatitis, have an important influence upon the follicles of the second dentition, those of the milk teeth also being more or less affected in certain cases. In many cases of hereditary syphilis, the front teeth, particularly the central incisors, present certain peculiarities (see Pl. XIX., Fig. 2); and, associated therewith, the cornea is often found to bear the marks of the peculiar parenchymatous inflammation above described. When this co-existence of symptoms is observed, it may be regarded as certain that the case is one of inherited syphilis. Teeth thus affected are, as a general rule, imperfectly developed, and of a colour varying from yellow to a peculiar ashen grey, and they differ from the ordinary scrofulous or stomatitic teeth in very important particulars. In the latter forms the enamel is more or less imperfect, notched and pitted irregularly, but in the typical syphilitic cases, the *upper permanent incisors* have at their edges a *crescentic* notch, which once seen cannot easily be mistaken for any other condition. Moreover, it is the *central* incisors which are especially affected, the deformity being in nearly every case symmetrical. The two teeth generally converge together below, but sometimes they are widely apart.

These appearances are so decisive that on discovering them in a child, and taxing the father with having been the subject of syphilis, he will generally admit the truth of the indictment, and exhibit some surprise at the sagacity of the interrogator. The symmetrical character of the affection constitutes presumptive evidence in favour of its specific origin, just as in certain syphilitic skin diseases the symmetry of the lesions is a peculiar characteristic. It must be admitted that ordinary stomatitis occasionally gives rise to imperfection of dental structure, but the specific inflammation gives a peculiarly diagnostic mark, which is quite different from any other. When it is remembered that the teeth, hair, skin, and nails are all tegumentary or dermal organs, and that the constitutional effects of the syphilitic virus often show themselves in their greatest intensity in structures of this character, the lesions of the teeth in cases of hereditary syphilis are easily intelligible. Mr. Hutchinson has carried his investigations into the imperfection of dental structure further still, and has given the name of *mercurial* teeth to a peculiar conformation of the molars, in which the enamel is found rugous, pitted, and irregular, and peculiarly liable to caries. But inasmuch as this condition is frequently observed amongst the inhabitants of countries where mercury is never used, or, as in Germany, used only in minute quantities, it is probable that this distinction rests upon too slight a basis to be definitely accepted. But it cannot be doubted that the crescentic notched upper permanent incisor teeth are peculiarly, nay even certainly, diagnostic of inherited disease.

Affections of the Ear.—Attention has been called by Mr. Hutchinson to the frequent occurrence of *deafness* in the subjects of congenital syphilis. The appearance of this symptom is generally coincident with that of the keratitis, but it may precede or follow the development of the changes in the eye. Both ears are usually affected, and in the majority of Mr. Hutchinson's cases the deafness was complete. More or less otorrhœa sometimes precedes the loss of hearing, but in the cases referred to, the changes in the membrana tympani were not sufficient to account for the deafness. This, therefore, must be considered as due to some lesion of nervous portions of the auditory apparatus; the cochlea is the most probable seat of the disease. In the early stage, the very high notes are lost much sooner than ordinary sounds, such as the voice. An important fact connected with this affection is that adult life is often reached before the symptoms make their appearance. If the affection occurs in early life, deaf-mutism is a frequent result. The *prognosis* is unfavourable. Some of the patients become totally deaf, others only partially so; and in the former class, the deafness often becomes complete in the space of a few weeks.

Affections of the Bones.—Until a very recent date, these affections were considered as extremely rare in infants. Diday says that if the disease which attacks the new-born child is severe, it proves fatal before it reaches the tertiary stage; if it is slight, specific treatment generally suffices to neutralise it before it reaches the advanced stage in which changes in the bones are usually developed. Subsequent observers, amongst whom Wegner, Parrot, and Barlow may be mentioned, have, however, discovered that several affections of the bones occurring in young children and supposed to be due to rickets and scrofula, are really connected with the syphilitic taint; and it is now generally admitted that peculiar bony lesions, in addition to those met with in the acquired form of the disease, are to be found in the subjects of hereditary syphilis.

Syphilitic lesions of the periosteum and of the bones, with or without the deposition of gummatous products, occur in these cases, and resemble in their progress and consequences those described in a previous chapter. Dactylitis is also sometimes observed in the subjects of hereditary syphilis.

But in addition to these affections, there are certain others which are the peculiar results of hereditary syphilis, and are due to disordered growth of the bones. This disorder shows itself by various irregularities in the process of ossification, which may be either accelerated or retarded or even altogether checked, thus constituting two varieties; the one consisting of development of new tissue, the other of atrophy of pre-existing structures.

New formations of bony tissue in the form of osteophytes, lesions of the epiphyses of the long bones, and the formation of medullary spaces in the compact substance of the long and flat bones, are the main results of these processes.

The Long Bones.—The changes which take place in the long bones may be divided into those which begin in the periosteum and those which commence in the ossifying line of the diaphysis. When the process starts in the periosteum, the changes are hypertrophic in character, and consist in the formation of osteophytic growths (see Pl. XX.).

Two forms of these osteophytes are met with —the hard, or osteoid; and the soft, rachitic, or spongioid.

The hard variety may occur at any period of childhood; but the fibro-spongioid is not found in infants before the sixth month of life.

The hard growths are softer and less resisting than ordinary bone, and differ from it in their structure. They consist of fibrous and osseous trabeculæ, which are mostly arranged perpendicularly to the surface of the bone. The periosteum covering the new growth is thickened and adherent. There is a distinct line of demarcation between the new tissue and the healthy bone beneath. The soft variety is more fibrous in structure, and is more vascular than the preceding.

The tibia is the bone which is most frequently attacked, and next to that the humerus; but any of the long bones may be affected.

When the shaft of a long bone is affected, as, for example, the crest of the tibia, the bone is thickened for its entire length in front, the sharp edge of the crest becoming obliterated and occupied by a smooth osteophytic growth, presenting, when viewed laterally, a convexity anteriorly, but there is no marked projecting point. The whole tibia resembles in shape the curve of a sabre blade, and Fournier has given this characteristic deformity the name of *lame de sabre* tibia.

The changes which take place at the line of ossification at the junction of the diaphysis and epiphysis are atrophic in character, and exhibit two varieties—the chondro-calcareous and the gelatiniform.

The chondro-calcareous form was described by Wegner under the name of osteochondritis. In the first stage of this affection, there is pronounced proliferation of the cartilage cells at the line of ossification, with irregular calcareous deposit; but conversion into true bone either does not take place, or is delayed, and occurs irregularly.

The gelatiniform variety has been especially insisted upon by Parrot, though it should be stated that

Wegner also described this condition. The lime salts disappear, and the bony tissue becomes transformed into a gelatinous mass, which may extend for some distance into the diaphysis.

Secondary to these changes—and following as a consequence of the arrest of development, there is a loss of nutrition in some parts of the calcareous-cartilaginous layer, with consequent necrosis and suppuration. Separation of the epiphysis is likely to occur, and the neighbouring joint may be implicated, constituting one of the forms of acute arthritis of infants.

Both these changes, but especially the gelatiniform atrophic condition, are very apt to lead to a separation of the epiphysis from the diaphysis, the symptoms of which have been described by Parrot under the name of "Syphilitic Pseudo-paralysis." The humerus and femur are most likely to be affected. There is nothing abnormal in the spinal cord or muscles, and there is no true paralysis, the muscles reacting to both kinds of electricity, and the symptoms are entirely due to the displacement described. The onset is usually sudden, and the joint is not affected. If the upper limb is affected, it hangs powerless to the side, the forearm being pronated. There may be feeble movements of the fingers.

When the lower limb is affected, the leg is extended and powerless; and, if the child is held up by the arms, the legs will oscillate and swing, as Parrot says, like those of a doll. If the condition is not recognised and treated, there will be permanent disability, together with atrophy from disuse. The disease generally occurs in early infancy; and, on careful examination, the separation of the epiphysis can usually be made out. The symptoms which point to this are:—Shortening of the limb, and perhaps crepitus, the deformity, the pseudo-paralysis, and pain when the limb is moved.

In the skull, osteophytic growths are developed only in older children in the form of bosses, and are found almost exclusively at the periphery of the frontal and parietal bones along the lines of the sagittal and inter-frontal sutures, beginning at two or at all of the four corners of the anterior fontanelle. They begin as lenticular, red or violet elevations, rising quite abruptly from the outer table; they are porous and spongy, sometimes hard, but very rarely smooth. They gradually extend to the neighbouring parts, and in marked cases affect the whole of the cranial vault. Obliterations of the sutures and consequent changes in the shape and dimensions of the cranial cavity are occasional results. The growths, when especially marked posteriorly, extending backwards from the anterior fontanelle, constitute what M. Parrot has called the *natiform* deformity. They are pathognomonic of congenital syphilis, and are frequently spoken of as "Parrot's nodes."

The effect of these "bosses," when situated on the frontal bone, is to give a rounded prominent form to the forehead, which condition may be frequently seen in conjunction with other signs of hereditary syphilis in later life.

Barlow and Lees have pointed out that the condition known as cranio-tabes is very likely to occur in children the subjects of hereditary syphilis. The bones of the vault of the skull become of paper-like thinness in circumscribed patches. The favourite situation for these lesions is in the occipital region. Cranio-tabes and "bosses" may occur in the same subject. Out of one hundred cases of cranio-tabes, hereditary syphilis was present in eighty-eight of that number.

The following table, which has been compiled partly from Fournier's work on "Hereditary Syphilis," gives the principal changes which are found in the shape of the skull:—

I. Lesions manifesting themselves by alterations in the shape of the forehead.

- *a.* The Olympian forehead, high, broad, and either straight vertically, or bulging slightly forward.
- *b.* The forehead with lateral bosses. Produced by hyperostoses or bosses on the frontal eminences.
- *c.* The keel forehead. This form is produced by a hyperostosis placed vertically on the inter-frontal suture.

II. Lesions manifesting themselves by changes in the upper and lateral parts of the cranium.

- *a.* Cranial bosses.
- *b.* Transverse enlargement of the cranium from the position of the parietal bones. Under this heading may be placed the natiform skull of Parrot.

III. Lesions due to atrophy, and lesions which may be due only indirectly to hereditary syphilis.

- *a.* Asymmetry of the skull.
- *b.* Cranio-tabes.
- *c.* Hydrocephalic skull.
- *d.* Microcephalic skull.

Formations very similar to those above described are met with in rickets. M. Parrot thinks that this latter affection is always connected with hereditary syphilis; but syphilis does not produce rickets, and it would appear more probable that hereditary syphilis is only one out of many causes which, by lowering the general health, may increase the tendency towards a rachitic diathesis. This question will be discussed in the next chapter.

Affections of Joints.—Fournier describes, besides a functional arthralgia, three affections of the joints, the result of hereditary syphilis. The first variety consists of a chronic hydroarthrosis, which occurs secondary to hyperostosis of the epiphyses. The second form simulates "white swelling"; here, again, the symptoms arise as a consequence of epiphysial disease. The third variety is produced by an osteophytic growth developing from the epiphysis, on a level with or close to the articular surface, and producing limitation of movement and subsequently ankylosis of the affected joint, together with muscular atrophy and arrest of growth of the limb.

The Liver.—The liver is the organ which is most frequently affected in hereditary syphilis. This frequency is most probably due to the part played by this organ in the fœtal circulation, for it will be remembered that the liver receives the maternal blood directly from the umbilical vein. It will usually be found that the principal lesions occur in this gland, and though other viscera may be affected yet the oldest and most advanced alterations will be discovered in the liver.

The lesions due to hereditary syphilis present themselves under three forms:—as a general diffuse infiltration; as large, or as miliary nodules. In the general and diffuse infiltration the liver is enlarged and much harder than in the normal condition. It has a cartilaginous feeling on section, the cut surface being homogeneous in appearance. The whole or part of the liver may be affected. In the nodular form there are pale-yellow, firm, and circumscribed nodules of varying size, which show a great tendency to become converted into cicatricial connective tissue, or in some cases to break down and become purulent. When these nodules are near the surface, they are frequently marked by slight depressions over them, and they seem to occur more frequently in the neighbourhood of the suspensory ligament. The nodular variety is never seen except in association with the diffuse form of infiltration.

The Spleen.—This organ is often considerably enlarged and indurated in hereditary syphilis; indeed, Dr. Gee has found that the spleen is enlarged in about twenty-five per cent. of cases of this disease. It is usually a fatal complication; but if the child survives, the spleen gradually diminishes, though remaining enlarged for a long time after other symptoms have disappeared.

The Pancreas.—Syphilis of this organ is rare; and the cases so far recorded have been mostly due to hereditary disease. There may be hypertrophy due to hyperplasia of the connective tissue, which later on causes a sclerotic condition with atrophy of the gland-substance. The disease is, in many cases, confined to the head of the pancreas.

The Supra-Renal Capsules.—These bodies are very rarely affected with hereditary syphilis, but Virchow has described a fatty degeneration. Such cases are, however, very rarely seen, and it is probable that these structures enjoy an immunity from changes in the hereditary disease.

The Alimentary Canal.—Various changes which have been ascribed to hereditary syphilis are found in the alimentary canal, and such lesions are more frequent in the hereditary than in the acquired form of the disease. The small intestines are more often affected than the large bowel.

The disease generally commences as a small cell infiltration in the neighbourhood of the blood-vessels of Peyer's patches or of the solitary glands. This produces an obliterating endarteritis, which is followed by necrosis and ulceration of the patch. A small localised peritonitis usually accompanies this change. In other cases there is diffuse gummatous infiltration of the submucosa, with occasional small circumscribed gummata.

The Rectum.—Gummata, accompanied by diffuse infiltration, have been noticed in late hereditary syphilis.

The Kidneys.—These organs are probably often affected in hereditary syphilis ; but the only changes that have been noted are gummatous nodules, and a granular degeneration of the epithelium of the convoluted tubules.

The Genital Organs.—The testicles may be affected by a diffuse or by a circumscribed form of infiltration. The disease is usually confined to the body of the testicle, but occasionally the epididymis may be involved. The condition is exactly identical with syphilitic sarcocele of the acquired form. The genital organs of persons of both sexes who are affected with hereditary syphilis will be frequently found small and undeveloped. In males, the penis and testicles will appear infantile, the hair on the pubes will be scanty, and the virile power weak or wanting. In women, the genital organs are often quite rudimentary, and the mammæ share in this want of development. Menstruation is delayed and scanty. Where the ovaries and uterus are rudimentary, the catamenia will be absent.

The Lungs.—Important changes, either of a diffuse or of a circumscribed character, are occasionally found in the lungs in cases of hereditary syphilis.

Patches of hepatisation, more or less complete, are distributed throughout the organs, which are also firmer and whiter than natural, and resemble fœtal lungs. Gummatous nodules, varying in size from a pea to a hazel-nut, are also met with. These are at first greyish, or greyish-red and hard, but afterwards become white and opaque, the centre being softer than the periphery, as a result of fatty degeneration. An ill-defined capsule of connective tissue frequently surrounds each nodule. These gummatous deposits are often found associated with similar lesions in the liver.

The Larynx, Trachea, and Bronchi.—As long ago as 1837, Abraham Colles referred to the hoarse cry as a diagnostic sign of hereditary syphilis, and called attention to the fact that when this sign was present, syphilides around the anus would shortly make their appearance. Very little attention was paid to the subject until John Mackenzie, in the "American Journal of Medical Sciences," wrote an exhaustive paper on the affections of these organs.

According to this observer, the laryngeal lesions of hereditary syphilis are constant and characteristic. The laryngeal affection usually comes on within the first six months after birth; and may be classified as superficial, deep, and interstitial.

The chronic superficial variety is most frequently met with. It first appears as a diffuse hyperæmia associated with a corresponding congestion of the trachea and pharynx. Later on the laryngeal mucous membrane becomes swollen, thickened, and œdematous. If this condition is not recognised, small superficial ulcers occur on the mucous membrane, and in this stage the complaint is not very amenable to treatment. When cicatrisation of these ulcers occurs, small polypoid granulations arise around the edges of the cicatrix.

At its commencement this laryngitis is frequently mistaken for an ordinary catarrh. The characteristic cry of a syphilitic child is due to the early stages of this condition.

The deep ulcerative laryngitis corresponds very closely with that seen in the acquired tertiary form. It may occur independently, or as a sequel to the superficial variety.

The chronic interstitial variety is the rarest form; but this condition is important from its tendency to produce stenosis of the larynx. Sémon showed two specimens at the Pathological Society in 1880 where death had occurred from acute laryngeal œdema supervening upon this interstitial variety; and many other observers have noted cases of the kind. The trachea may be affected in a similar way, but this condition is much rarer.

In hereditary laryngeal syphilis the voice is decidedly altered. Zeissl has compared the infant's cry to the sound produced by a toy-trumpet. In older children the voice becomes husky, and may be lost.

There is paroxysmal cough of a suffocative nature, which frequently induces vomiting. The cough is excited by crying and swallowing, and is usually worse at night, when it may be accompanied by symptoms of dyspnœa. Swallowing is painful and difficult, and laryngismus frequently occurs.

The Thymus Gland is frequently affected in hereditary syphilis. The gland may be normal in size and appear healthy; but on pressure it exudes a viscid alkaline fluid containing pus cells, and on section the tissue appears denser than normal, with scattered areas of fibrinous infiltration, or there may be a diffuse infiltration. In the circumscribed variety, small collections of pus are frequently seen, and such abscesses have been ascribed to breaking down of gummatous deposits.

THE NERVOUS SYSTEM.—For the purpose of studying the affections of the nervous system in hereditary syphilis, it will be convenient to arrange them in three classes, and consider them under the headings of affections of the brain, of the cord, and of the peripheral nerves. It may, however, be noted that as in acquired syphilis, so in the hereditary disease, two or three of these varieties may occur simultaneously or successively in the same individual. Other evidences of hereditary disease may or may not be present to help us in our diagnosis. Then again, many of the symptoms which are probably due to hereditary disease cannot be undoubtedly proved to be caused by this affection, and when to this we add that many of the lesions produced are simulated by other diseases, such as rickets, it will be seen that to give an accurate diagnosis may present insurmountable difficulties.

In hereditary syphilis the nervous system is liable to be attacked in intra-uterine life, as well as in infancy and childhood, at a time when the organs are not in a fully developed condition, and consequently we often see that the symptoms produced are caused rather by a want of development than by a specific lesion. Hence it is that the hereditary is frequently found to differ from the acquired form of the disease, the nervous system in the latter case having attained its full growth.

Cerebral Lesions due to hereditary syphilis, like those which are consequences of the acquired form of the disease, may be either single, diffused, or multiple. Whilst therefore for the purpose of studying and considering these affections, they are described separately under their appropriate headings, it must be borne in mind that one very seldom sees disease of the nervous system in syphilis where the lesion is single, but as a rule several occur together or in succession.

The meninges may be affected either as a primary disease, or secondary to lesions in other tissues.

Dura Mater.—The most common affection is a chronic pachymeningitis, occurring either as a primary affection or as secondary to some other lesion.

It has been frequently noted that a hæmorrhagic diathesis occasionally accompanies hereditary syphilis. When this condition is present, subdural and sub-arachnoid hæmorrhages may occur, the symptoms of which will vary with their extent and position. Hæmorrhage may also occur from endarteritis.

The *pia mater* is frequently affected. Acute leptomeningitis, due to hereditary syphilis, resembles very much the tubercular variety, and the absence of other evidence of specific disease would render the differential diagnosis a matter of impossibility.

Chronic inflammation of the pia mater sometimes occurs, but is usually found in connection with a cortical lesion.

The Brain.—Most of the changes observed in the brain are due to specific disease of the arteries, which may produce either hæmorrhage, thrombosis, or embolism, with subsequent softening, the symptoms of which must vary according to the parts affected.

Gummata and diffuse gummatous infiltration of the brain are rare in hereditary syphilis.

Sclerosis of the cortex may occur, and is generally secondary to chronic leptomeningitis. The symptoms produced by the cerebral and meningeal lesions are numerous and complex. Owing to the fact that these affections occur before the brain-functions are fully developed, and to the frequent multiplicity of the lesions, it will be evident that psychical symptoms will be often pronounced.

Congenital idiocy is common, but other conditions, such as irritability and excitability, dulness and apathy, want of mental control, inability to concentrate the mind and feeble-mindedness, occur as the result of defective development of the brain.

The frequent occurrence of hydrocephalus in hereditary syphilis suggests that there may be some connection between the two diseases; but this subject has not yet been worked out.

Hemiplegia or paraplegia may occur from cerebral or meningeal lesions. They present as a rule no special difference from the same conditions due to other causes.

If we find that a paralysis in one limb develops suddenly in a child, and this is followed in a varying time after by sudden paralysis of another limb, hereditary syphilis must be strongly suspected as the cause. So, too, multiple central paralyses of the limbs coming on at different periods, and recurrent paralyses of the same limb, suggest hereditary syphilis.

Epilepsy. — When the cortex has been injured or destroyed by the lesions of hereditary syphilis, epileptic attacks are very likely to supervene. In such cases the convulsions will probably be limited in their range, and a hemiplegia frequently co-exists. Although subjects of inherited syphilis are frequently found to suffer from idiopathic epilepsy, we cannot, in the present state of our knowledge, say that the inherited syphilis is the cause of the attacks; but that it predisposes to them seems at least probable.

Lesions of the Spinal Cord.—The spinal cord and its membranes are very rarely affected in hereditary syphilis; but a few cases have been noted where paraplegias of varying intensities have been traced to this disease.

The Peripheral Nerves.—Barlow has related a case of a boy fifteen months old, the subject of hereditary syphilis, in whom growths were found on both third nerves, and on the fourth, fifth, seventh, and eighth nerves of one side. The tumours were near the origin of the nerves. Other cases of affections of the cranial nerves have been related, but gummata of the other peripheral nerves are unknown.

Blood-vessels.—But little is known with regard to the effects of inherited syphilis upon the blood-vessels except upon the cerebral arteries. The cutaneous and other hæmorrhages, sometimes noticed in hereditary syphilis, have been attributed to a form of endarteritis, similar to that which occurs in connection with the acquired form. Troublesome hæmorrhage from the umbilical vein has been observed in infants suffering from hereditary syphilis.

DIAGNOSIS OF HEREDITARY SYPHILIS.—The symptoms are by no means invariably so distinct as to admit of a positive conclusion with regard to their origin. In doubtful cases, however, the nature of the disease generally becomes evident after a brief interval. The symptoms once developed pursue a rapid course, and unless checked by treatment soon increase in number and intensity. As already mentioned, the subjects of hereditary syphilis may be arranged in three classes.

(1) Those to all appearances quite healthy at birth, and presenting no symptoms of disease until several days or weeks, or even months have elapsed.

(2) Those showing no marked signs of syphilis during an indefinite interval, but ill-developed, puny and emaciated from the first.

(3) Children born with unmistakable signs of syphilis upon them.

In the children belonging to the first category, refusal to take the breast is often the first symptom, and this is due to cracks and sores about the lips and mouth. After a few days the symptoms of nasal catarrh generally set in and are characteristic of the disease. The fissures about the nostrils and lips, the evidences of ulceration of the nasal mucous membrane, the discharge of a muco-purulent or sanious fluid, the formation of crusts in the nostrils, mucous papules in various parts—*e.g.*, around the anus, on the lips and behind the ears, on the genital organs, in the groins, etc.—are pathognomonic of the disease. Alterations in the voice, enlargement of the spleen, dryness of the skin, and some one or other of the eruptions already described, are generally superadded to the above symptoms as time goes on.

In the case of children belonging to the second category, the peculiar appearances already referred to (see page 369) are sometimes of so decided a character as to be pathognomonic of the disease. If, however, they are only slightly marked, it will be impossible to give a decided opinion until other symptoms manifest themselves.

When cutaneous lesions are present at birth (see p. 369) the diagnosis is for the most part easy. Bright coppery-red erythematous patches on the skin; mucous papules on various parts; ulcers and fissures about the anus, nostrils and lips; the state of the nose; the bullæ of pemphigus; the inflamed, shining, tense condition of the palms and soles, combined with excoriation and ulceration, constitute a decidedly characteristic group of symptoms, any or all of which may be present.

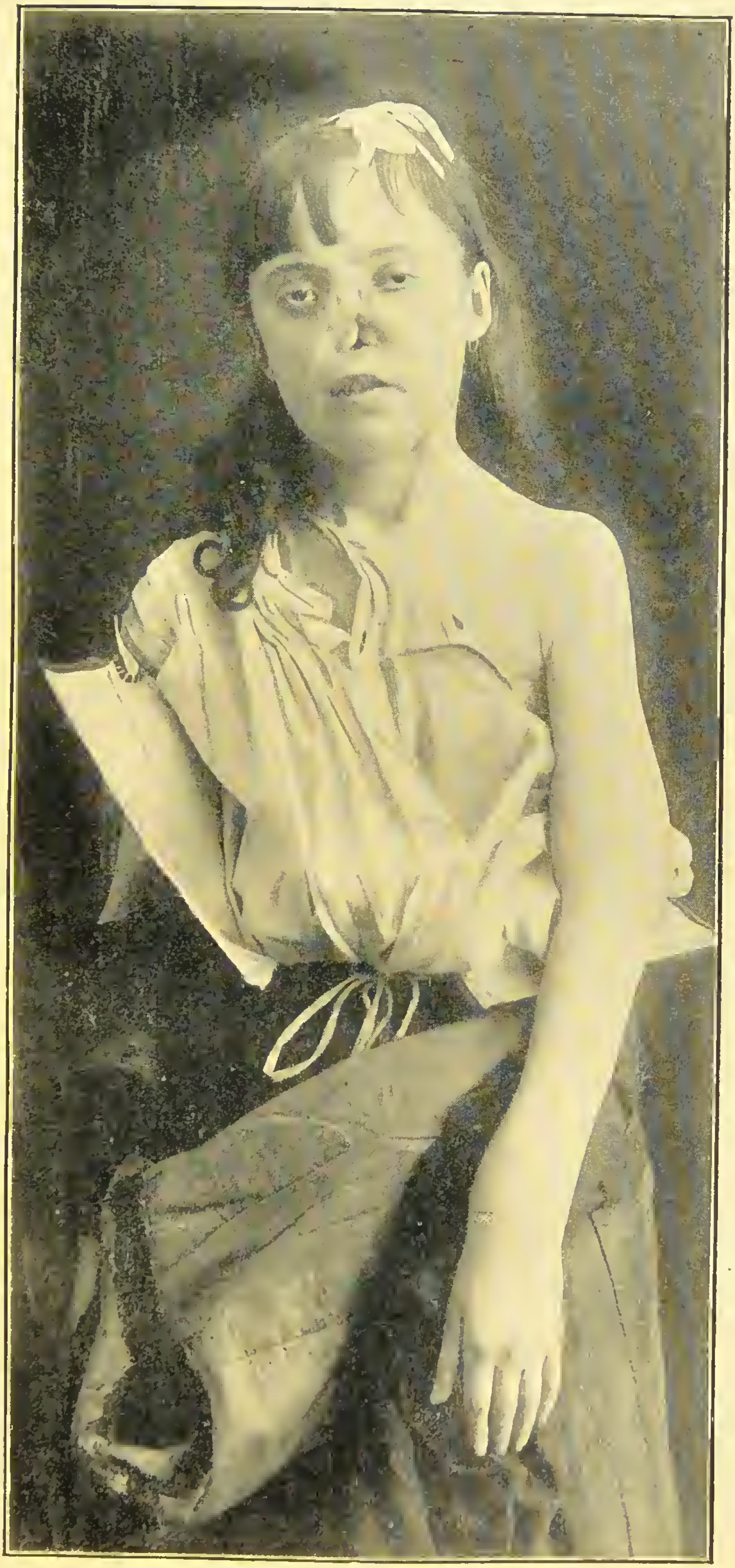
Other diagnostic signs of hereditary syphilis as seen in children during the first year are those indicative of retarded development. The eruption of the teeth, the closure of the fontanelles, and the ossification of the cranial sutures are considerably delayed in some cases; in others, a microcephalic condition may be present. The long bones, especially the tibia and humerus, should be examined for lesions such as have been described at p. 385.

In later life hereditary syphilis can often be recognised by such traces as falling-in of the nose; prominence of the frontal eminences; present or past signs of parenchymatous keratitis; the peculiar malformations of the incisor teeth; deafness; and the presence of fine linear cicatricial marks, extending from the nostrils and the angles of the mouth. To these signs may be added a general want or arrest of development.

Prognosis of Hereditary Syphilis.—This is unfavourable in the large majority of cases. Zeissl states that more than two-thirds of the deaths due to syphilis occur in the subjects of the hereditary form of the disease. The child's system is, so to speak, saturated with the poison, and its condition resembles that of an adult in the tertiary stage. There is therefore a considerable difference *in limine* between the hereditary and the acquired forms. The time at which the child's symptoms are manifested is a very important element in the question of the prognosis. If the symptoms are unmistakably present at birth, or appear very soon afterwards, a fatal termination may be expected. On the other hand, if the symptoms are latent for two, three, or more weeks, the prospect is much more favourable, and, as a general rule, it improves in a degree proportionate to the length of the interval. The prognosis is of course influenced by the condition of the child and its prospects as regards careful nursing, etc. When the

EXPLANATION OF PLATE XX.

Case of hereditary syphilis, showing destruction of nose and deformity produced by exostoses of bones of arm and forearm. (From a photograph lent by *Dr. Colcott Fox.*)



appearance of the symptoms is delayed until the second or third month, the disease is generally of a mild type. Severe affections of the mouth, nose, and throat, pustular eruptions, and evident disease of internal organs—*e.g.* the lungs and liver—are the most formidable sources of danger. When the mouth and throat are fissured and ulcerated, it may become impossible to feed the child, and exhaustion rapidly follows. Diarrhœa and vomiting often usher in the fatal termination. When recovery takes place from the early symptoms, relapses sometimes occur, the hereditary taint showing itself in malformations of the teeth, keratitis, disease of the bones of the palate and nose, etc. The question of latency has been already considered (see page 366); the relations between syphilis and other disorders will be discussed in another chapter. Whether hereditary syphilis protects the subject of it from the full effects of the acquired form has not as yet been decided.

Treatment.—Mercury in some form is the remedy to be employed, and the results in many cases are very satisfactory. It may be administered either internally or by the skin. For the former purpose, the Hydrarg. cum Cretâ is the best preparation, and may be given in one-grain doses twice or three times a day. If it causes diarrhœa, a third of a grain of Pulv. Ipecac. Comp. should be added to each dose. The result must be carefully watched; marked improvement is generally noticeable when the medicine has been given for about a fortnight. The dose may then be diminished, but the medicine should be persevered with until the symptoms disappear, and its use must be renewed whenever any sign of a relapse becomes apparent. When there is much debility and emaciation, cod-liver oil should be given at the same time. Administration by the medium of the skin is the most convenient and best way of exhibiting the mercury in hereditary syphilis, and is especially adapted for cases in which diarrhœa exists. The tender skin of infants bears inunction badly, and a very convenient plan is to spread about thirty grains of mercurial ointment on a piece of flannel, which is bound round the child's body. This application is renewed every day after the child has had a warm bath.

In dealing with the cutaneous lesions, the greatest cleanliness must be enjoined. The sores and fissures about the mouth and nose should be dressed with red oxide of mercury ointment; condylomata should be dusted over with calomel. Deep and painful fissures about the mouth or the anus should be touched with a finely-pointed piece of nitrate of silver. A camel-hair brush dipped in glycerine and water must be used to clear away the secretion from the nostrils and mouth. Baths containing the perchloride of mercury are sometimes useful where the skin affections are severe. For this purpose, from fifteen to forty grains of the perchloride are dissolved in water with an equal weight of chloride of ammonium, and added to the child's ordinary bath of warm water, which should be used for about half an hour daily. The osseous lesions require iodide of potassium or the iodide of iron.

A very important point is that which relates to the feeding of the child. If the mother is unable to suckle it, artificial feeding must be resorted to, and humanised cow's milk, or diluted pancreatised cow's milk, will be found the best substitute for the mother's milk, and very preferable to the usual rickets-producing babies' foods so extensively used and advertised. It is not justifiable to employ a wet-nurse, unless a woman can be found who has already suffered from syphilis without her health being much impaired. Even in this case, however, there is the risk that the woman may convey the disease to a third individual, if lesions be present on the lips of the infant she suckles. The mother, as has been shown at the beginning of this chapter (see page 351), is free from any such risk, so that it will be best where possible for the child to be suckled by its mother; for the artificial preparations which often take the place of the mother's milk are but very poor substitutes for it.

CHAPTER XXV.

THE RELATIONS BETWEEN SYPHILIS AND OTHER DISEASES. — SYPHILIS AND WOUNDS.

THE influence which certain pathological conditions have upon the course of syphilis, and the manner in which syphilis increases the gravity of other disorders, are subjects which have not as yet received much attention. With respect to the first of these questions, it may be regarded as an established rule that the general health of the patient has a very considerable influence in determining the course of the disease. *Cæteris paribus*, persons in impaired health from any cause will suffer more severely from syphilis than robust individuals; and the tubercular diathesis, especially if it is in any way decided, influences the disease in a very unfavourable manner. The severity of syphilis in tropical climates is due, in many cases, to the fact that the patients have previously suffered from malarial fevers, dysentery, and other exhausting diseases. The pernicious effect of alcohol upon the gravity of the disease has been already referred to (see pages 28 and 341).

With regard to the acute diseases, it would appear that those attended with febrile symptoms sometimes interfere with the evolution of the symptoms of syphilis. The appearance of an acute disease, such as severe fever, inflammation of the lungs, etc., supervening soon after infection, has, in some cases, seemed to retard the development of the cutaneous syphilides. Lancereaux mentions several cases in which syphilitic eruptions disappeared on the supervention of an attack of cholera. An attack of small-pox does not apparently affect the course of a syphilitic eruption when this has already developed. The occurrence of erysipelas, however, influences the course of syphilitic eruptions. In a case in which this disease supervened in a patient the subject of syphilitic papules, produced by artificial inoculation, these were observed to become level with the surface while the attack of erysipelas lasted, and to regain their prominence after its subsidence. Certain constitutional conditions, notably Bright's disease, the gouty and the rheumatic diatheses, tend to aggravate the severity of syphilis.

With regard to the influence of syphilis upon other diseases, there are some which it certainly aggravates, while apparently it does not interfere with the course of others. Tuberculosis, Bright's disease, and rheumatism belong to the first category, in which may also be included wounds and injuries in some cases. The influence of syphilis on tuberculosis is to increase the severity of the affections. When tubercular subjects become syphilitic, the skin, the glands, and the periosteum are especially prone to become affected; and suppuration, which is not a common effect of syphilis, is liable to occur.

Tubercle impresses a more lasting character upon the local manifestations of syphilis. When patients suffering from pulmonary tuberculosis become syphilitic, the course of the disease is always accelerated. Such a result is only to be expected in view of the tendency, which syphilis sometimes exhibits, to localise itself in the lung, and to produce symptoms closely resembling those of phthisis (see page 215).

Some of the symptoms of chronic rheumatism and those of certain syphilitic affections of the bones and joints much resemble each other, and a combination of the two diseases is certain to aggravate the symptoms of both. Patients thus affected would be especially liable to suffer from pains in the joints and the more superficial bones, becoming more severe at night and in damp and cold weather. It would appear probable that syphilis influences gout in a very special manner. Patients suffering from gout are usually middle aged, and syphilis contracted after forty is always a serious affection, and certainly tends to aggravate all chronic disorders, and especially those accompanied by evidences of defective elimination. Moreover, febrile disturbance, due to syphilis or other causes, is liable to give rise to severe pains in the joints in gouty subjects.

The question as to whether syphilis exerts any influence upon the healing process of wounds is important in respect to surgical operations on those suffering from this disease.

It would appear that the union of fractures is sometimes delayed in syphilitic subjects, and syphilis is a well-recognised cause of non-union of fractures. Treatment of the disease by iodide of potassium has been known to disturb the union in cases of recent fracture. In a patient under my care the callus formed around a recent fracture of the arm rapidly became dissolved while this remedy was being administered for a rupial eruption. It is by no means certain that syphilis exercises any influence upon the healing of incised wounds. If, however, an incision be made into a recent syphilitic cicatrix, or into a cutaneous gummatous tumour, ulceration will probably be induced. Zeissl, while denying that the healing of incised wounds in syphilitic subjects differs in any way from the ordinary process, admits that syphilitic inflammatory products may be called into activity as a result of continuous pressure or blows. He cites a case in which tracheotomy was performed upon a syphilitic subject. The upper portion of the wound remained normal, the lower portion, upon which the cannula pressed, was the seat of ulceration. In plastic operations for the relief of deformities due to syphilitic ulceration, it is of course advisable to wait until all active manifestations have ceased. In interfering with a syphilitic cicatrix there is always the risk that ulceration may be reproduced and may spread to the parts around.

Prof. Verneuil has collected a number of cases from which he concludes that wounds in syphilitic subjects are liable to present a peculiar appearance and to follow an abnormal course. He states that the wound sometimes ulcerates and sometimes remains stationary, and then cicatrises very slowly. He also affirms that syphilis may localise itself in the form of ulceration or a gummatous growth at the seat of a wound in a region previously free from any manifestations. Verneuil's experience, however, is not in accordance with that of the majority of surgeons. With regard to the effect of contusions it is probable that exostoses often arise from this cause in syphilitic subjects; the specific inflammation is localised at the point injured. It is in all probability due to this circumstance that nodes are most frequently found on the frontal bone, the sternum, clavicles, tibia, etc., these bones being superficial and most exposed to cold and injury. In a case under my care, of a gentleman who spent much of his time on horseback, large nodes became developed on the inner side of the head of each tibia. The fact that syphilitic manifestations are prone to appear on parts exposed to irritation is also illustrated by the frequent development of mucous papules on the lips and tongue of smokers.

In connection with the subject of syphilis and wounds, some experiments made by Tarnowski, of St. Petersburg, possess considerable interest. Starting from the fact that the manifestations of syphilis are especially prone to appear in parts exposed to irritation, and that syphilitic infiltration sometimes develops around the seat of an injury in persons who show no other signs of the disease, Tarnowski aimed at exciting syphilitic manifestations by irritating the integument. For this purpose he applied small portions of Ricord's paste to several spots in two hundred syphilitic subjects and in fifty others suffering from various chronic affections of the skin and internal organs. He expected to discover a test for obscure cases of visceral syphilis, and also a means for ascertaining whether the disease had really come to an end in any given case. No definite conclusion could, however, be drawn from the results obtained, for in some patients, obviously syphilitic, no decided infiltration appeared round the margins of the wounds. In other cases the cauterised spots were surrounded by a dusky red border of infiltration, which did not appear until the inflammatory reaction, due to the caustic, had completely subsided. This result could almost always be obtained in the interval between the primary induration and the development of secondary symptoms, and especially in persons who had taken no mercury ; but in the later stages and in cases of visceral syphilis the results were generally negative.

Certain constitutional disorders of childhood have been regarded as in some cases more or less directly connected with syphilis in the parents. It has been thought that this disease may not only be transmitted as such, but may appear in the offspring in the form of tuberculosis, or rickets. To establish the existence of such a relation it would be necessary to prove that these diseases are more common in children who are suffering or have suffered from inherited syphilis than in others; and that the majority of those children of syphilitic parents who are free from the disease themselves, are especially prone to suffer from one or other of these constitutional disorders, which are, so to say, the reflection of the specific disease. These assumptions are, however, destitute of sufficient foundation. The syphilitic dyscrasia is not capable of transformation into either tuberculosis or rickets. All that can be admitted is that a condition of debility, due to syphilis, may favour the development of those disorders.

In the case of tubercle it has been noticed that children who have passed through several stages of hereditary syphilis sometimes present glandular swellings and caseation, but these appearances are due to the disease itself, and to its effects on the general health. The severe tertiary symptoms in the mucous membranes and bones, which sometimes manifest themselves at a later period in the subjects of hereditary syphilis, closely resemble the effects of tuberculosis, but their connection with syphilis is proved by the fact that they are preceded by well-marked symptoms of the hereditary disease. And with regard to children presenting no signs of the inherited disease, although the offspring of syphilitic parents, it has not been shown that tuberculosis is more common among them than among those whose parents had never suffered from syphilis. It may, however, be conceded that the children of parents much reduced in health by syphilis would be more likely to exhibit signs of tuberculosis than those whose parents were healthy, but the possession of such an influence is by no means peculiar to syphilis.

With regard to *rickets*, syphilis may be said to cause various degrees of this affection simply by the cachexia which it produces. In this respect its influence is the same with that of any other chronic disease which impairs the nutrition of the body generally. When diarrhœa is a marked symptom of hereditary syphilis, signs of rickets are very apt to appear; but the same result often follows prolonged diarrhœa due to other causes. Cranio-tabes is probably often the result of a dual condition, a combination of rickets, and hereditary syphilis. Rickets in the vast majority of cases is utterly independent of hereditary syphilis, and this was clearly shown in the discussion on the subject at the International Medical Congress of 1881.* Parrot's opinion that rachitis is one of the later stages of hereditary syphilis is not generally accepted.

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* See "Trans. of Congress," vol. iv. pp. 51 *et seq.*

CHAPTER XXVI.

SYPHILIS AND INSANITY.

Although the relationships between syphilis and insanity have been briefly alluded to in the chapter on "Diseases of the Nervous System," the subject, owing to recent attention and investigation, is one of such importance that we have deemed it necessary to devote a special chapter to its consideration.

We may state that a large amount of our knowledge on this subject is due to the observations of Dr. G. H. Savage, who has kindly placed his writings at our disposal.

In studying the mental disturbances which sometimes supervene on an attack of syphilis, it will be convenient to consider the relationships in some definite order; and for this purpose we have availed ourselves of the following scheme, drawn up by Dr. Savage:—

(1) Insane dread of syphilis.
(2) Insane dread of results of syphilis.
(3) Syphilitic fever, delirium, and mania.
(4) Acute syphilis, leading to mental decay.
(5) Syphilitic cachexia and dyscrasia, and mental disorder.
(6) Syphilitic neuritis (optic), suspicion, mania.
(7) Syphilitic ulceration, disfigurement, and morbid self-consciousness.

(8) Congenital syphilis: cranial, sensory, or nerve-tissue defects.

(9) Congenital syphilis: epilepsy, idiocy.

(10) Infantile syphilis, acquired.

(11) Constitutional syphilis—
    (*a*) Vascular or fibrous.
    (*b*) Epilepsy.
    (*c*) Hemiplegia.
    (*d*) Local palsies.
    (*e*) General paralyses, cerebral, spinal (spastic and tabetic), peripheral.

(12) Locomotor ataxy.
    (*a*) With insane crises.
    (*b*) With insane interpretation of the ordinary symptoms.

As was pointed out when considering syphilitic affections of the nervous system, it is somewhat frequently noticed that the cerebro-spinal system is especially liable to be attacked where the secondary symptoms have been very slight or entirely absent. Dr. Savage believes that it is not correct to infer from this that the syphilis has been imperfectly treated, and has consequently developed unchecked, and that more thorough treatment would certainly have prevented the development of nervous symptoms. In many of the cases in which these latter manifestations have followed constitutional syphilis, treatment had been regularly and continuously applied before the nervous symptoms exhibited themselves, and the continuance of the treatment did not affect the course of the nervous disorder in any way. In cases of cerebro-spinal syphilis, apart from mental disease, our own experience does not quite tally with this statement; though we thoroughly believe that it is possible to over-treat syphilis, and thus, by keeping the remembrance of the disease constantly before a neurotic patient, to increase its tendency to set up mental disturbance. We cannot, however, get away from the fact that when the secondary symptoms are very slight, treatment, in a large majority of cases, is of very short duration, and this is the class of disease from which most of the cases of cerebro-spinal syphilis arise.[*]

Syphilis may cause mental disease in various ways. There may be loss or destruction of nerve-tissue by tertiary lesions, which may produce organic dementia. It may cause sensory troubles, culminating later on in mental disorder; or the function and nutrition of some part of the brain may be so modified as to produce insanity or epilepsy.

It is to be noted that syphilis is much more likely to cause mental disease in those individuals whose nervous system is weak or unstable, either from age, habit, or inheritance, than in those possessing a strong and healthy nervous organisation.

Although syphilis may be the match which sets fire to a train of mental symptoms, still there is no form of mental unsoundness which can be accurately described under the head of "syphilitic insanity." So again, syphilis may be present in an insane individual, whose mental disease is neither dependent upon nor modified by the specific disorder.

Dr. Savage is of the opinion that syphilis is rarely the only factor in the production of insanity; alcoholic and other excesses, strain, injury, and general modes of life act as contributing conditions. This statement is analogous to that made in the chapter on nervous diseases, where we expressed the opinion that syphilis and alcoholic excesses combined are potent factors in the production of cerebro-spinal disease.

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[*] Comp. Fournier, "Traitement de la Syphilis," p. 35.

Moral Effects of Syphilis.—*Insane Dread of Syphilis.*—This morbid state shows itself in various distinct ways.

A man may contract syphilis, and become in consequence depressed; this depression may become true melancholia, accompanied by insomnia and a suicidal tendency. Or a man may contract syphilis after marriage, and may be haunted with the fear of infecting his wife and children. In these two instances, the knowledge of the syphilis present acts as the idea around which the melancholic feelings group themselves, the whole being but an exaggeration of the real fact.

Another class of cases includes true syphilophobia. Here the patient is imbued with the idea that he has contracted syphilis, whereas such is not the case. The patients are usually young men who lead unsocial and solitary lives; they are not infrequently masturbators. In these cases there is often a complaint of some uncomfortable feeling in the skin; hallucinations of smell may be present, and may lead them to suppose that others are able to detect the syphilitic nature of their disease. Should there be any acne-spots present, as in this class of cases is far from infrequent, their delusion is strengthened, as they will frequently point these out as indisputable evidence of the presence of syphilis.

Insane Dread of the Results of Syphilis.—Dread of syphilis may cause melancholia, by giving rise to the delusion that the patient is impotent, or that he is and always will be unable to marry. This form of mental weakness may lead to melancholia of a most pronounced and dangerous type.

Syphilitic Fever, Delirium, Mania. — Syphilitic fever may be associated with delirium, which may be the starting-point of a maniacal attack.

Syphilitic Cachexia and Dyscrasia, and Mental Disorder.—Occasionally cases are seen in which general physical and mental weakness are developed as the syphilitic symptoms progress.

Syphilitic Neuritis, Suspicion, Mania.—Syphilitic optic neuritis, when associated with temporary defect of sight, may cause the patient to be suspicious and violent against those whom he deems his persecutors, and various other delusions may arise.

Syphilitic Ulceration, Disfigurement, and Morbid Self-consciousness.—If there is much disfigurement, due to the ravages of the disease, delusions may occur that the victim of them is a leper, and is pointed out as such. The patient is first of all morbidly self-conscious of his disfigurement, and is likely to attempt to drown his thoughts in drink. This leads to hallucinations and delusions of persecution, and this form of insanity is frequently complicated with homicidal or suicidal mania.

Congenital Syphilis may be the cause of idiocy, and Dr. Savage classes such cases under three heads :—

(*a*) Those with general defect of development, with moral and intellectual want. This class contains children who may be grouped among the various forms of idiots, the only special feature being distinct history of parental syphilis, with evidence of the hereditary disease in the patient.

(*b*) Those with sensory defects and consequent mental want. This group contains cases of deafness, or blindness, or both, due to hereditary disease ; and where the defects have been produced in early infancy, idiocy has been caused by deprivation of sensory stimulation.

(*c*) Those with epilepsy or paralysis, and consequent idiocy. Here there are two divisions, the epileptic and the paralytic. The former frequently commences with convulsions in early infancy, and the attacks, becoming habitual, retard mental development. In the latter class, and in some of the epileptic cases, a local cerebral lesion may be the cause of the epilepsy or of the paralysis, which is complicated with idiocy.

In acquired infantile syphilis, the mental growth and development may be defective.

Insanity Associated with Constitutional Syphilis.—This group of cases may be divided into two large classes. In the first division, the symptoms of mental disorder may be due to changes in nutrition, or to degeneration leading to functional defect. In the second division, the relationships between the degeneration and the mental symptoms are not easily established.

Syphilitic Epilepsy.—In a syphilitic individual of middle age, who has a series of epileptic fits not due to injury or to alcohol, it is probable that syphilis is the cause. Paralysis and dementia are likely to supervene, or the fits may precede the development of general paralysis.

Epilepsy, as pointed out in the chapter on "Diseases of the Nervous System," may be due to a localised thickening of the membranes, to a localised gumma starting therein and invading the brain substance, or to a lesion of the blood-vessels. Dr. Savage states that it is rare to meet with an epileptic maniae whose epilepsy is due to syphilis, this form of the complaint tending to stupidity rather than to violence.

Syphilis and Hemiplegia with Dementia.—In syphilitic hemiplegia, especially where recovery from the motor defects is incomplete, dementia is very likely to supervene. This dementia may be occasionally preceded by mental excitement.

Local Paralysis due to Syphilis followed by Insanity.—Isolated local losses of power, especially of the cranial nerves, so peculiarly the result of syphilis, are occasionally followed by various forms of mental disease. It is not uncommon to meet with general paralysis of the insane with the previous history of a local syphilitic paralysis.

It may happen that treatment has removed all the visible symptoms of a local syphilitic paralysis, but later on the patient begins to develop eccentricities in his habits, or insanity comes on. The character of the individual becomes quite changed for the worse, and there seems to be a blunting of all the higher moral senses and perceptions. These patients, as a rule, rapidly become worse, and soon succumb.

General Paralysis of the Insane and Syphilis.—It is now pretty generally recognised that syphilis plays an important part in the production of this disease. It is found that general paralysis is most common where the occurrence of syphilis is frequent; but this simply means that it is a disease most frequently met with in the centres of highly civilised populations. It is noted that the larger proportion of cases of general paralysis in syphilitics occur in private practice and in the asylums for the treatment of the better class of patients. Dr. Savage believes that at least seventy per cent. of his private cases of general paralysis have clear histories of constitutional syphilis.

General paralysis of the insane is not necessarily specific in its origin, but syphilis is one of its common causes, and its action on the nervous system may consist in starting a process of degeneration which ultimately produces the symptoms of general paralysis. General paralysis of the insane is by far the most frequent form of mental disorder due to syphilis, which probably bears the same relation to these psychical disturbances as it does to locomotor ataxy.

Syphilis may give rise to Pseudo-general Paralysis.—In this class of cases, an attack of syphilis is followed, in later life, by symptoms of motor and mental disturbances. The physical symptoms are, at the onset, the more pronounced; but the psychical ones are quite sufficient to warrant a diagnosis of general paralysis. The disease runs the ordinary course; but sooner or later the development of the symptoms is arrested, and the patient, although mentally damaged, may live on for many years without further progress of the disease.

Syphilis may produce true General Paralysis.—True general paralysis, the result of syphilis, may be—

1. Cerebral. 2. Spinal. (*a*) Spastic. (*b*) Ataxic.

In the cerebral form one frequently hears of a syphilitic lesion of a local cranial nerve, which is followed in a few years by symptoms of general paralysis. The disease, as a rule, terminates in dementia and fits. It appears that the local lesion in some way starts the degenerative process which gives rise to symptoms of general paralysis.

In other cases, there is nothing except the previous history of syphilis to distinguish them from general paralysis due to other causes, and they run a similar course.

General Paralysis of Syphilitic Origin with Spastic Spinal Symptoms.—This exactly resembles that form of the disease which is produced by other causes, and there is nothing in the symptoms to differentiate these cases, but in spastic general paralysis there is almost invariably a specific history. The patients are generally young, and often females. In addition to the usual symptoms of general paralysis, there is great contraction of the limbs.

General Paralysis of Specific Origin with Ataxic Symptoms.—The mental symptoms may precede the ataxy, may coincide with it, or they may appear after its development. As we have previously pointed out, ataxy is frequently of specific origin; and in this class of cases we have a combination of the two symptoms. In some of the patients the symptoms have a tendency to remit or to alternate, so that both the ataxic and mental symptoms may partly disappear, or one set of symptoms may develop whilst the other declines.

Locomotor Ataxy with Insane Crises.—An ataxic patient may become maniacal. The attacks are usually sudden and last only a short time, but they are apt to recur.

Locomotor Ataxy with Insane Interpretation of the Ordinary Symptoms of the Disease.—In these cases the ordinary symptoms of locomotor ataxy are explained in an insane manner by the patient.

Dr. Clouston, of Edinburgh, has described in his book on Neuroses of Development a form of general paralysis which he has named "adolescent." Dr. Savage has met with similar cases, and in every one there has been evidence of congenital syphilis.

In conclusion, we must remember that although syphilis plays an undoubted and large part in the production of certain mental disturbances, especially of general paralysis, yet there are other factors which must not be forgotten. Chief among these are: overwork, worry, sleeplessness, anxiety, money troubles, drink, injury, sexual excesses, and above all, hereditary predisposition to neuroses.

CHAPTER XXVII.

MEDICO-LEGAL AND SOCIAL QUESTIONS CONNECTED WITH SYPHILIS.—SYPHILIS AND MARRIAGE.—SYPHILIS AND LIFE INSURANCE.

Various medico-legal questions are connected with the subject of syphilis.

(1) In cases of rape, medical evidence is sometimes required to determine whether one or both of the persons concerned are suffering from syphilis.

(2) In the cases of nurses infected by their nurslings and *vice versâ*, a medical investigation is requisite for the discovery of the infecting source.

(3) The question of syphilis and vaccination has been already considered (see page 58). Its medico-legal bearings are very important, now that the possibility of the transmission of syphilis by means of vaccination is clearly recognised.

(4) Midwives not infrequently contract the disease from syphilitic patients, and subsequently communicate it to other women. Cases of this nature are sometimes brought before a court of law.

(5) In cases of doubtful identity the existence of hereditary syphilis may constitute evidence of some value.

(6) A medical witness may be asked to decide whether syphilis is invariably communicated during

intercourse, when one of the parties concerned is suffering from the disease.

(7) In actions for divorce, the existence of syphilis may constitute presumptive evidence of infidelity on the part of the accused.

1. In cases of rape, the existence of syphilis in both accuser and accused may serve to corroborate the charge. If the disease is present in the one and absent in the other, the evidence afforded by the examination tends, on the other hand, to rebut the accusation. As a matter of course, careful inquiry must be made as to the precise time at which the alleged rape was committed, and the condition of the sore must be minutely observed. If a woman bringing a charge of rape against a man is examined immediately after the perpetration of the offence, and is found to be suffering from decided syphilis, the unchastity of the female is proved by the examination. The man, if examined at once, will, in such a case, even if guilty of the offence, present no sign of syphilis, and he may, of course, escape altogether. If, however, an indurated sore appears three or four weeks after the date of the alleged offence, the fact may serve to support the charge. In the case of soft sores, the incubation period will, of course, be much shorter. If both the accuser and the accused are suffering from indurated sores, the question will arise as to whether a sufficient time has elapsed for incubation to take place. In the case of children upon whom attempts at rape have been made, the communication of syphilis constitutes a proof upon which much reliance can be placed. Before coming to a positive conclusion, it is necessary to be satisfied that the disease could not have arisen from infection irrespective of attempts at sexual intercourse.

2. The most common question for medico-legal

inquiry arises when a child entrusted to a wet-nurse presents, after a certain time, evident signs of syphilis. The source of the infection is the point to be determined. In a second and more numerous class of cases, belonging to this category, it is the nurse who alleges that she has been infected by her nursling. The complaint, in these latter cases, is generally made late, sometimes after the death of the child. In forming his opinion, the medical jurist is guided by the date, the seat, and the form of the specific lesions both in the nurse and in the child, both of whom, when possible, must be carefully and minutely examined. Inquiries must also be made into the past and present state of health of the parents and that of their other children, if there are any. The condition of the children, and husband of the nurse should also be investigated.

In the examination of the child, the fact must be borne in mind that in the majority of cases the first signs of congenital syphilis appear before the end of the second month (see page 366). After the expiration of three months, the probability that any symptoms will appear is comparatively small. The most contagious lesions, as regards the nurse, are the mucous patches about the mouth, lips, and nose, co-existing with which, similar affections are usually to be found in the neighbourhood of the anus and genital organs. Persistent and obstinate coryza, vesicular, pustular, or bullous eruptions, lesions of the nails, affections of the epiphyses of certain bones, are other prominent symptoms, which occur in various combinations. When syphilis is communicated by the nurse to the child, the first symptom will generally be a primary lesion about the lips or tongue. The evolution of the disease will be different from that of hereditary syphilis.

With regard to the nurse, it is all-important to obtain accurate information as to the state of her health before she began to suckle the child, and to ascertain in which of the two the symptoms really appeared first. When the nurse is affected by the child, the first symptom which she presents is generally an indurated ulcer or an ulcerating papule, upon the nipple or close to its base. This follows the usual course: the induration increases; the glands in pectoral region and in the axilla become swollen and hard; roseola and other secondary symptoms appear as in other cases. When syphilis begins in the breast, at a time when the genital organs are intact, the origin of the disease is evident. The genital organs are at first free from any lesion, but mucous papules are likely to become developed later on. When, however, these co-exist with mucous papules of the breasts, in the infra-mammary folds and not on the nipples, as is sometimes seen, it may be regarded as certain that the nurse did not contract the disease from the child. It must be remembered that the mother may suckle with impunity a child who communicates the disease to a nurse, and that a child suffering from hereditary syphilis sometimes infects one nurse and not another. The state of health of the nurse's own children constitutes important evidence in one or other direction. If these remain perfectly healthy, syphilis in the nurse is rendered unlikely. If the nurse's last-born child is suckled at the same time as the nursling and is found to have become infected, the source of the disease may be predicated with certainty.

3. The questions with regard to syphilis and vaccination have been discussed in a previous chapter (see p. 58).

4. In the case of medical men and midwives who contract the disease in the course of their duties, and

subsequently communicate it to other women, discovery seldom takes place until several persons have become affected. Not only the lying-in woman, but her child, and in some cases her husband successively contract the disease. In a flagrant example of this kind, the midwife, with an unhealed sore on her hand, continued to attend women in spite of warnings from medical men. She communicated the disease to several women; in one case the child alone was infected, and in three cases the husbands subsequently suffered. The midwife was indicted for having unlawfully and maliciously done grievous bodily harm to the infected women, and was sentenced to twelve months' imprisonment. It was proved that she had not only been warned, but that she had attended at least one case after she had been made aware that others whom she had attended were already suffering from the disease.

5. With regard to symptoms of hereditary syphilis as affording evidence in questions of doubtful identity, such cases are of rare occurrence. The symptoms of hereditary syphilis in young adults have been fully described (see pp. 382 and 400). The co-existence of notched incisor teeth with corneal opacities, the result of parenchymatous keratitis, constitutes the most decisive evidence.

6 and 7. With regard to the last points mentioned at the beginning of this chapter, it is well known that syphilis is not invariably communicated during intercourse when one of the parties concerned is suffering from the disease. In actions for divorce, when the defendant is alleged to have contracted syphilis, the medical witness will have to determine the truth or falsity of the allegation. For the general diagnosis of syphilis the reader is referred to the chapter on this subject (p. 336).

SYPHILIS AND MARRIAGE.

A question which a medical practitioner frequently has to decide, and one which involves considerable responsibility, is as to whether a person who has once had syphilis but is free from all active manifestations of the disease, may be allowed to marry without undue risk to possible offspring and to the wife? That the child may inherit the disease from its father through infection of the mother is universally admitted; and that the mother may become infected through the fœtus is believed by a large number of observers. The health of the children and that of the mother are, therefore, in jeopardy, the total exclusion of risk is impossible, and the question in a given case is, what is the amount of the risk to be run? Is it so great as to forbid marriage, or is it so small that marriage may be permitted with almost perfect confidence that no evil results will follow? There are, of course, many intermediate degrees of probability. The surgeon's duty will be to ascertain the facts and to advise the patient as to their bearing and importance.

When a patient, who states that he has had syphilis, seeks advice as to whether he is fit to marry, the first thing to be done is to test the accuracy of his statement. There is such a condition as *syphilophobia*, and it also not infrequently happens that persons assert that they have been infected with syphilis, whereas they have suffered only from non-infective or harmless sores. In most cases, however, the statement with regard to syphilis is based upon fact, and the practitioner in answering the patient's question will be guided by several considerations. These are mainly two in number, and they refer to the stage of the disease, or to the interval that has elapsed since infection, and to the duration and nature of the treatment to which the patient has been subjected.

With regard to the first point, it is of course presumed that the patient's genital organs are free from any active lesion. Traces of induration often remain for months after infection, and a much longer interval generally elapses before the glandular swelling subsides. The penis is also the occasional seat of secondary lesions, the secretions of which are contagious. But even if the genital organs show no signs of disease, manifestations of syphilis may exist in other parts, such as in the mouth, and the disease may be directly communicated from these lesions. The existence of any external manifestations of syphilis is prohibitory of marriage. In the absence of any symptoms of this kind it may be laid down that, as a general rule, marriage is permissible, provided that three years have elapsed since infection, that during two years the patient has been subjected to careful and systematic treatment, and that no symptoms of the disease have developed for twelve months. *Cœteris paribus*, the longer the interval, the greater the probability that the disease has become so far extinguished that transmission will not take place, but the question is one of probability only. If, however, infection was followed by a two years' course of mercurial treatment, and another year has elapsed without any sign of syphilis appearing, the patient may be regarded as safe.

The notion, somewhat widely prevalent, that baths of sulphurous waters are of any value as a test of the existence or non-existence of syphilis, is destitute of any real foundation.

The existence of tertiary symptoms shows, as a general rule, that the disease has passed the stage in which transmission is probable. Cases of this kind are not infrequent. A syphilitic patient marries, being free from all active symptoms, and becomes the father of several healthy children, who never show any sign of syphilis. The father, however, in the course of years presents gummatous ulceration or signs of syphilis in internal organs. It also sometimes happens that a man with decided secondary symptoms begets a healthy child.

The danger to the wife has been described in the chapter on "Hereditary Syphilis." The methods by which she may become infected have been there fully pointed out, and the fact has been alluded to that repeated miscarriages are not infrequent results of such contamination.

The whole subject of syphilis and marriage* has been exhaustively treated by Professor Alfred Fournier, who thus sums up the conditions which a syphilitic subject should satisfy in order to enjoy the moral right of marrying.

1. Absence of actual specific symptoms.
2. Advanced age of the diathesis.
3. A certain period of absolute immunity since the last specific manifestation.
4. The non-menacing character of the disease.
5. A sufficient specific treatment.

SYPHILIS AND LIFE INSURANCE.

We have endeavoured, by addressing letters to the medical officers of some of the most important Life Insurance offices, established in this country, to find out the influence exercised by syphilis on the health and longevity of the assured, and the general principles adopted by the companies in regard to syphilitic individuals.

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* "Syphilis and Marriage." By Prof. Fournier. Translated by Alfred Lingard. 1881.

Dr. Pollock lays down the following rules for guidance on this subject in his Medical Handbook of Life Assurance.

The assurance rules may be stated:—

"During the actual existence of any syphilitic disorder, the proposal should be postponed.

"A man who has had syphilis in only the ordinary cutaneous and superficial forms, and has undergone treatment for it, may be accepted after a year has elapsed without symptoms.

"If he has had syphilis in the secondary forms, a small addition should be made to the premium; and then only accepted if two years have been passed since the latest symptom.

"Those who have had internal syphilis affecting the brain, cord, liver, lungs, kidneys, etc., should be rejected."

It will be noticed that the second and third of the above rules somewhat clash, as "cutaneous and superficial forms" of syphilis are usually regarded as secondary, and on drawing Dr. Pollock's attention to this statement he has informed us that in the next edition this error will be corrected.

The answers received to our queries from six large offices are, with one exception, identical. They will all accept a life that has had syphilis: *provided that the disease is completely cured.* One of the offices would not refuse the life if their medical officer reported the treatment pursued would lead to a cure, provided that the man's habits (temperance, etc. etc.) and general bodily condition would contribute to the success of the treatment.

The five other offices limiting the selection to a perfect cure would not exact an extra premium; but if any taint were in the system which could possibly affect the health in the future, an extra five years would be added to the life.

One large office refuses to entertain proposals of insurance where there is any history of syphilis.

We would suggest that the Society of Medical Officers to Life Assurance Companies should put this matter upon a more explicit and definite footing, and endeavour to draw up a table of statistics showing the mortality of insured lives due directly and remotely to syphilis.

CHAPTER XXVIII.

THE PREVENTION OF SYPHILIS.

The manner in which syphilis is communicated being perfectly understood, and the ravages caused by the disease being only too evident, it might be supposed that, in civilised communities, every endeavour would be made to stamp out a pestilence fraught with such evils to humanity. The widespread prevalence of the disease, however, clearly shows that the means adopted for checking its extension are very inadequate for the purpose.

The possibility of stamping out syphilis can scarcely be disputed, though the difficulties are undoubtedly great and manifold. Strange as the statement may appear, it is more than probable that the frequency with which the disease occurs blinds persons in general to its dangers. As to what that frequency is the medical profession alone, and chiefly those members of it who practise in large towns, have any true conception. A large majority of the young men of the upper and middle classes suffer in youth from some form of venereal disease, and among the lower classes syphilis is terribly common and often very severe.

Such being the actual position with regard to syphilis, it may be asked, Why is the disease thus so common and how does it spread? The answer is definite to a degree. Excluding the hereditary form, syphilis is propagated principally by sexual intercourse; cases in which the disease is acquired in other ways constitute a very small proportion of the entire number. The source of the virus is prostitution, and the questions arise, Can the disease be checked at its source? or can the source itself be abolished?

If the second of these questions could be answered in the affirmative, the first would be superfluous. No human means, however, are sufficient to abolish prostitution; a certain amount will go on, but this amount will diminish or increase in proportion to the adequacy or inadequacy of the measures adopted for its control. If things are allowed to take their own course, if, as in London at the present day, prostitutes are allowed to ply their calling in any place they may select, without the slightest interference, the result must be that their number will increase, and that the spread of syphilis will be proportionately facilitated.

On the other hand, not only prostitution, but syphilis as well, can be diminished by properly regulated official supervision. It is the duty of the State as the guardian of the public health not only to limit prostitution, but to exercise a careful supervision over an evil which it cannot repress. It is surely necessary that the present system with regard to prostitution should be altered. Prostitutes are now allowed to congregate in all our public places. The principal thoroughfares and the various metropolitan and suburban railway-stations are their favourite haunts at the present time. To exclude all prostitutes from the public thoroughfares would be impossible, but solicitation could be prevented, and a large amount of open prostitution would be thereby checked.

The objection that the liberty of the subject would be interfered with is met by the consideration that the State does, in many ways, for the public good, interfere with individual liberty. As the late Dr. Parkes said:—"In the case of venereal diseases, the State must as much protect its citizens as from the danger of foul water, or the chances of gunpowder explosions, or the risks of any other perilous and unhealthy trade. If men want prostitutes they must go and seek them. If a woman desires to become a prostitute she must know that she will not be allowed to pursue her calling in the public streets or in public places."

It has been shown beyond dispute that official supervision over prostitution has considerably diminished the amount of syphilis in the places where it has been exercised. Such supervision must of course include the detection and cure of the disease in prostitutes. "Secret, unwatched prostitution is far more active in spreading the disease than prostitution which is under control." The difficulty is to detect the disease in prostitutes. In all other European countries an elaborate system is in use for this purpose; brothels are registered, and their inmates regularly examined. Such a system is to be considered simply as a precautionary measure; its adoption is not to be regarded as in any way sanctioning prostitution, or even as a recognition of its inevitableness. "A custom exists which we cannot set aside; let us obviate its effects as best we may," hoping that the custom may be gradually removed by other means.

With the object of checking the spread of syphilis in the army and navy the continental plan was partially adopted in this country; and it is much to be regretted that in the spring of 1883 the Act in force was shorn of its efficacy by a vote of the House of Commons, as the compulsory clause was abandoned for voluntary examination. It is important to notice the various attempts that have been made to control prostitution. In 1864, the Government passed a Bill, by the provisions of which, in the neighbourhood of certain places (six large naval and military stations), prostitutes found to be diseased were to be taken to a hospital, and kept there till cured. The course of procedure was a cumbersome one. Information had to be given that a woman was diseased, if she then appeared in public for the purpose of prostitution she could be apprehended, examined, and if really diseased sent to a hospital; she could also be followed to a brothel and apprehended. In 1866, another Act was passed, by the provisions of which women known to be common prostitutes were compelled to submit to periodical medical examination, and if found to be diseased, were detained in Lock Hospitals for treatment, until cured. This Act applied to all the more important naval and military stations, and in some cases to adjoining parishes. The carrying out of the provisions of these Acts resulted in a decided decrease in the number of primary venereal sores at all the military stations under the Act, as compared with those not included in the schedules. In 1878, at fourteen stations under the Act, the admissions for primary venereal sores averaged 40 per 1,000, while in fourteen stations not under the Act the admissions reached 86 per 1,000, for the same affections. An equal or even greater difference was observed in other years. As might be expected, not only the frequency but the severity of the disease was much reduced, as proved by comparing the cases with those observed in unprotected towns and districts. In 1870, an attempt was made to repeal the Act, and a Royal Commission was appointed to report upon its effects.

The Report shows most decidedly that the worst forms of the disease had been much reduced among the lower classes of prostitutes, and that the women had also been benefited in an indirect manner. "The Acts have purged the towns and encampments to which they have been applied of miserable creatures, who were mere masses of rottenness and vehicles of disease." The Report further says, "We are satisfied from the evidence that the *frequent examination* of women is the most *efficacious* means of *controlling* the disease."

The Acts continued to be administered and to produce their beneficial effects until the spring of 1883, when, by a chance-vote of the House of Commons, a fatal blow was struck at their efficacy. They were not, indeed, repealed, but a Resolution was carried (April 20), "That this House disapproves of the compulsory examination of women under the Contagious Diseases Acts." The balance of argument was entirely in favour of the maintenance of the Acts in their integrity. The Judge Advocate-General declared that though his vote might jeopardise his seat at another election, he must protest against any attempt to impair the efficiency of a "system which had done much to check the progress and alleviate the severity of one of the most terrible scourges of humanity, and had also done something to mitigate in its worst forms one of the most baleful as well as the most prevalent vices of modern society." It appeared in the course of the debate that there existed an entire divergence of opinion between different members of the Government on the question of the Acts. The result of the passing of the above Resolution was that orders were at once sent to various military and naval stations, directing the police, hitherto employed in carrying out the provisions of the Acts, to discontinue their operations. The Lock Hospitals remained; but, as a matter of fact, very few women presented themselves voluntarily. Finally the Acts were suspended in 1886, and things are now as they were before the Acts were passed. It is to be hoped that another Parliament will rectify the mistake, and that another Government may be found willing to assume responsibility even at the risk of incurring unpopularity among a certain influential but ill-informed class of the community.

The above observations and remarks have been confirmed in the most decided manner by the experience of my friend Mr. Parker Wilson, Surgeon to H.M.'s Military Prison at Brixton. Mr. Wilson informed me that during the early months of 1884, the number of prisoners admitted was 342, and of this number 79 (23·09 per cent.) were found to be suffering from venereal disease. In 1882, the percentage of these cases was 2·9, and in 1883 (during part of which year the Acts were in abeyance), it was 4·5. Mr. Wilson goes on to say that many who are infected do not apply for treatment; and that not only has the practical abolition of the Act been followed by an increase in the *number* of cases, but that "the *character* of the disease, which had become modified, is beginning to assume its old virulent type." The result upon the health of the soldier is obvious; and inasmuch as the men under the short service system are more likely to marry before the disease is eradicated, the propagation of a race of infected offspring is the probable or certain consequence.

So, too, if we take the statistics since the Acts were suspended, as observed at those stations where the Acts were formerly in force, there will be found a more or less steady rise and increase in the number of cases of syphilis.

In connection with this subject Mr. Lecky, very pertinently, writes *:—

"There has arisen in society a figure which is certainly the most mournful, and in some respects the most awful, upon which the eye of the moralist can dwell. That unhappy being whose very name is a shame to speak, who counterfeits with a cold heart the transports of affection, and submits herself as the passive instrument of lust; who is scorned and insulted as the vilest of her sex, and doomed, for the most part, to disease and abject wretchedness and an early death, appears in every age as the symbol of the degradation and the sinfulness of man. Herself the supreme type of vice, she is ultimately the most efficient guardian of virtue. But for her the unchallenged purity of countless happy homes would be polluted, and not a few, who, in the pride of their untempted chastity, think of her with an indignant shudder, would have known the remorse of agony and despair. On that one degraded and ignoble form are concentrated the passions that might have filled the world with shame. She remains, while creeds and civilisations rise and fall, the eternal priestess of humanity, blasted for the sins of the people.

"In dealing with this unhappy being, and with all of her sex who have violated the laws of chastity, the public opinion of most Christian countries pronounces a sentence of extreme severity. In the Anglo-Saxon nations especially, a single fault of this kind is sufficient, at least in the upper and middle classes, to affix an indelible brand which no time, no virtues, no penitence can wholly efface. This sentence is, probably, in the first instance, simply the expression of the religious feeling upon the subject,

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* "History of European Morals," vol. ii. pp. 280 *et seq.*

but it is also sometimes defended by powerful arguments drawn from the interests of society. It is said that the preservation of domestic purity is a matter of such transcendent importance that it is right that the most crushing penalties should be attached to an act which the imagination can easily transfigure, which legal enactments can never sufficiently control, and to which the most violent passions may prompt. It is said, too, that an anathema which drives into obscurity all evidences of sensual passions is peculiarly fitted to restrict their operation; for, more than any other passions, they are dependent on the imagination, which is readily fired by the sight of evil. It is added, that the emphasis with which the vice is stigmatised produces a corresponding admiration for the opposite virtue, and that a feeling of the most delicate and scrupulous honour is thus formed among the female population, which not only preserves from gross sin, but also dignifies and ennobles the whole character.

"In opposition to these views, several considerations of much weight have been urged. It is argued that, however persistently society may ignore this form of vice, it exists nevertheless, and on the most gigantic scale, and that the evil rarely assumes such inveterate and perverting forms, as when it is shrouded in obscurity and veiled by a hypocritical appearance of unconsciousness. The existence in England of certainly not less than fifty thousand unhappy women, sunk in the very lowest depths of vice and misery, shows sufficiently what an appalling amount of moral evil is festering uncontrolled, undiscussed, and unalleviated, under the fair surface of a decorous society. In the eyes of every physician, and, indeed, in the eyes of most continental writers who have adverted to the subject, no other feature of

English life appears so infamous as the fact that an epidemic, which is one of the most dreadful now existing among mankind, which communicates itself from the guilty husband to the innocent wife, and even transmits its taint to her offspring, and which the experience of other nations conclusively proves may be vastly diminished, should be suffered to rage unchecked because the Legislature refuses to take official cognisance of its existence, or proper sanitary measures for its repression. If the terrible censure which English public opinion passes upon every instance of female frailty in some degree diminishes the number, it does not prevent such instances from being extremely numerous, and it immeasurably aggravates the suffering they produce. Acts which in other European countries would excite only a slight and transient emotion, spread in England, over a wide circle, all the bitterness of unmitigated anguish. Acts which naturally neither imply nor produce a total subversion of moral feelings, and which, in other countries, are often followed by happy, virtuous, and affectionate lives, in England, almost invariably, lead to absolute ruin. Infanticide is greatly multiplied, and a vast proportion of those whose reputations and lives have been blasted by one momentary sin, are hurled into the abyss of habitual prostitution—a condition which, owing to the sentence of public opinion and the neglect of legislators, is in no other European country so hopelessly vicious or so irrevocable."

Although strongly advocating a State supervision of prostitutes, which we have shown does not, by any means, constitute encouragement of vice, we are afraid that the community at large is not sufficiently alive to the evils of prostitution, and to the large and rapidly increasing amount of syphilis among the women. As a result of this ignorance, most persons fail to see the necessity of framing laws sufficiently powerful to cope with the present evil.

As a compromise we would suggest that all solicitation in thoroughfares of our towns and cities and in other public resorts, should be put down with a stern and firm hand. We are convinced that if this measure were carried out, a large amount of venereal disease would be prevented, and a great blot on our social system would be removed.

CHAPTER XXIX.

THE TREATMENT OF SYPHILIS.

The treatment of some of the more prominent lesions of syphilis has been succinctly described in preceding chapters. It now remains to discuss at some length the treatment of syphilis in general, and to point out the indications and contra-indications for the various remedies which are employed. In syphilis, as in all diseases undoubtedly depending upon a specific virus, the objects to be aimed at are to subdue the cause of the disorder, or to eliminate the virus from the system, and to assist the restorative powers of the body in the establishment of healthy function and structure. The treatment best adapted for the attainment of these objects consists in the administration of certain medicines and in the prescription of various hygienic rules.

It is unnecessary to do more than briefly allude to the *expectant treatment* as applied to syphilis. Some of those who still adopt it allow that recourse must be had to medicines—viz. iodide of potassium or mercury—if the symptoms prove to be particularly obstinate. Zeissl,* one of the chief advocates of the expectant method, treats the primary induration with simple local applications. When any eruption appears he gives some preparation of iodine, and if, after this has been persevered with for six weeks, the eruption still remains or any other symptom appears, he prescribes mercury in the form of Zittmann's decoction, or by inunction, or in very rare cases by subcutaneous injection. Such a method, however, appears to be at least illogical. Whatever may be the way in which mercury produces its effects, there can be no doubt as to its beneficial action upon the great majority of the *visible* manifestations of syphilis and upon many of the subjective symptoms; and, regarding, as we do, the induration as a symptom of the contamination of the system—as significant in this respect as a skin-eruption—we firmly believe that the earlier mercurial treatment is adopted after the diagnosis has been established the better will it be for the patient. If, as appears in the highest degree probable, mercury removes or relieves the more prominent "secondary" symptoms, the same remedy ought surely to be adopted in the treatment of the induration, which is *par excellence* the peculiar sign of syphilis.

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* "Lehrbuch der Syphilis," iv. Aufl., S. 669.

It has been shown by Fournier* that proper treatment has a very marked effect in preventing the occurrence of those tertiary lesions of the osseous and central nervous system, the presence of which is of such grave and serious import. He states:—

"Of a total of 1,664 cases showing tertiary symptoms of various kinds, I have found that:—

	Cases.
(1) Secondary symptoms were benign, or very benign in	1,424
(2) Secondary symptoms of moderate severity	131
(3) Secondary symptoms intense, or very severe	45
(4) Malignant syphilis	64
Total	1,664

The enormous proportion of cases of mild secondary syphilis showing tertiary symptoms can only be attributed to the reluctance so frequently shown, both on the part of the patient and of the medical attendant to treat benign syphilis energetically and for a sufficient length of time.

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* "Traitement de la Syphilis."

We know from our own personal experience how very difficult it frequently is to convince a syphilitic individual that although he may not be suffering from visible manifestations of the disease, it is most essential for his future well-being that the treatment should be continued.

Even at the present time, many members of our own profession are prone to regard a mild attack of syphilis as a very unimportant matter, and as a consequence frequently adjudge that further treatment is unnecessary and that the patient is cured of his disease. Unfortunately, they often base their opinions upon very insufficient evidence.

Our own personal experience fully corroborates the statistics brought forward by M. Fournier, and it is a matter of almost daily routine to be consulted by patients suffering from tertiary lesions, who, upon inquiry, are found to have had secondary syphilis of a mild type, which was treated only for a short time. Indeed, the pre-occurrence of syphilitic infection is frequently denied, owing, in many cases, to the symptoms having been so slight that they escaped both notice and treatment.

Therefore, we urge that, in our opinion, it behoves one to be very cautious in giving a favourable prognosis even of a mild attack of syphilis, and that this caution is much more imperative and necessary where the patient is unwilling to undergo a thorough course of treatment.

In addition, we would add that we do not at all agree with the views held by some syphilographers that symptoms, and symptoms only, should be treated; but hold the opinion that this is a most pernicious doctrine, which is fraught with much ultimate injury to the community.

In our opinion, every case of syphilis, even the most benign and the mildest forms of the disease, should be thoroughly treated.

The Medicines to be relied upon in the treatment of syphilis are mainly two—viz. mercury, in some one or other of its preparations, and iodine, which is generally given in the form of iodide of potassium. There are a few auxiliary remedies more or less useful in certain cases, which will be referred to later on.

For directions for the treatment of the primary induration the reader is referred to the chapter on that subject (see p. 101). As there stated, the most convenient way of administering mercury is by the mouth, and the pil. hydrarg. is the preparation I generally use. The dose is from three to five grains, combined with $\frac{1}{4}$ to $\frac{1}{2}$ gr. of opium night and morning, and the remedy should be continued until a very slight effect is produced upon the gums. The time required varies in different cases, but as a general rule some effect is observable in the course of two or three weeks. The patient must be carefully watched, and as soon as the gums become in the least degree tender and swollen, the dose must be reduced or the medicine given only once a day. Care must be taken to avoid salivation, which so far from being necessary is absolutely injurious, partly because it prevents the continuous administration of the medicine.

In the majority of cases, with proper care, the effects of the remedy can be kept up for an almost indefinite time. Should, however, salivation occur, as indicated by marked tenderness and swelling of the gums, tongue and salivary glands, a coppery taste, fœtid breath, and profuse flow of saliva, the administration of mercury must of course be forthwith discontinued.

In order to moderate the symptoms, the patient should take a dose of some active purgative with the view of removing from the bowels any remaining mercury, and should use some astringent and stimulating gargle. Milk forms the best and most pleasant gargle. A good formula often employed is—alum., potassæ chlorat. āā ʒiss, aquæ ℥xij. This should be used every two or three hours, and the mouth cleansed with a soft brush. A gargle composed of one part of brandy to four or five of water is also useful, and if there be much fœtor a drachm of the chlorinated solution of soda may be added to each ounce of the gargle. The only drug which has any affect in checking the salivation is atropia. This may be administered by the mouth in doses of $\frac{1}{300}$ of a grain every four hours until the symptoms abate. After the symptoms have subsided, a short interval should be allowed to elapse before the mercurial course is recommenced. The mercury must then be given very cautiously and in very small doses.

Attention has previously been called to the necessity that, where a course of mercury is being undergone, very strict attention should be paid to mouth-hygiene; any carious teeth should be extracted or properly filled, and accumulations of tartar should be periodically removed.

In the large majority of cases, provided that due care be taken, no such disagreeable effects follow the use of the mercury. When given as recommended for the primary induration, absorption of the latter almost invariably begins soon after the least degree of tenderness is felt in the mouth. If the indurated portion be of small dimensions, it will probably disappear in the course of a few weeks; if large, more time will be required, but its ultimate absorption may be confidently predicted.

It will be found to aid the success of the treatment very materially if the amount of opium, combined with the blue pill, is carefully adjusted from time to time, so that only just enough is given to control diarrhœa and colic. As the system becomes accustomed to the mercury the amount of the opium may be lessened. It is as well to bear in mind that the constipating effect of the drug, as well as the influence it exerts in lessening the eliminating processes of the skin and kidneys, is far from being an aid to the cure of syphilis.

The administration of mercury, as above recommended, appears in a few cases to cut short the disease—that is, to prevent any further constitutional manifestations. I have met with several instances of this kind in the course of my practice. In one case, a gentleman, aged thirty-five, presented a well-marked indurated sore, accompanied by indurated and very prominent glands in both groins. Under the use of blue ointment locally and blue pill internally the sore slowly healed. The mercurial treatment has been continued for a year, and there have been no secondary manifestations whatever. The induration has disappeared, but some enlargement of the glands remains. In the cases of two brothers, lately under my care, intervals of five and seven months respectively have elapsed since infection. Both these patients have been treated with mercury from the beginning, and no eruption or any other symptom has appeared. The treatment is still being continued. In the majority of instances, however, such results are not attained, but it may be regarded as an established fact that the early administration of mercury at least retards the outbreak of additional symptoms, and certainly mitigates the severity of any that may present themselves.

Patients undergoing a course of mercurial treatment should adopt certain precautions, and follow certain rules as to mode of living, etc. Confinement to the house in ordinarily fine weather is by no means necessary. On the other hand, it is probable that exercise and fresh pure air tend decidedly to prevent salivation. In the eruptive stage, confinement to the house is desirable, and when any special symptoms are present, such as high fever, iritis, laryngitis, etc., it will be necessary to keep the patient in bed. The patient should live quietly and regularly, should wear warm clothing, and avoid getting chilled. His diet should be plain, but nutritious. Alcohol is to be avoided, but if from any cause stimulants are required, some light wine, such as claret, may be allowed in moderation. It is advisable that the patient, if a smoker, should renounce tobacco while taking mercury. The skin must be kept perfectly clean, and for this purpose a daily tepid bath is desirable. The question as to the influence of a course of warm baths will be presently discussed.

With regard to the *time* during which the mercury should be administered for syphilis, it was stated in a previous page that the course of treatment should extend over two years. It is not, however, meant that the mercury should be *continuously* administered for this period. It should be given for six months, and then discontinued for a month or six weeks. Another course of three months is then advisable, after which a longer interval may be allowed. A third and a fourth course, with an interval between them of three or four months, will complete the treatment. It is obvious that this plan necessitates a considerable amount of self-control on the part of the patient, and in many cases it cannot be properly carried out. Every effort should, however, be made to induce patients to submit to a thorough course of treatment, and to remain under medical supervision for the time specified.

Other preparations of mercury, and other methods of administering the remedy, require to be briefly noticed. The tannate of mercury in doses of 1½ grs. and upwards is a very useful and efficient preparation, and is not found to cause disagreeable colicky symptoms which so often accompany other mercurial preparations; the simultaneous administration of opium is frequently unnecessary. The Hydrargyrum cum Cretâ is also useful in those cases in which mercury causes irritation of the bowels. Two or three grains combined with two grains of Dover's powder may be given twice or three times a day. It is especially serviceable in the treatment of hereditary syphilis. It may also be used for adults towards the end of a mercurial course. The subchloride of mercury, calomel, is unsuitable for administration in syphilis generally, except under circumstances in which it is desirable to bring the system rapidly under the influence of the remedy. It must then be combined with opium. The perchloride of mercury has been largely used in the treatment of syphilis since the end of the last century, when it was introduced mainly by Van Swieten. He appears to have suspected that salivation was not requisite for the cure of syphilis, and hence he was desirous of obtaining some mercurial "that might be diluted at will and so tried in a very small dose." He began his experiments with corrosive sublimate, as possessing these properties. This preparation has the advantage of being absorbed by the intestinal canal without undergoing change; other preparations have to be converted into the bichloride in order to become capable of absorption. The dose is from one-twentieth to one-twelfth of a grain twice or three times a day; larger doses are very apt to cause griping and purging. One mode of using it is in the form of pills made with crumb of bread, or the Liquor Hydrargyri Perchloridi may be prescribed. "A watery solution of perchloride of mercury readily undergoes decomposition, especially when exposed to solar light; calomel is precipitated and hydrochloric acid set free. This change is facilitated by the presence of organic substances, whereas it is checked by the presence of alkaline chlorides" (Pereira). The solution should always be recently prepared. The biniodide is an efficient substitute for the perchloride, and when dissolved in a watery solution of iodide of potassium it remains unchanged. It is, however, better adapted for the later manifestations of syphilis, such as relapsing papular eruptions, gummatous ulceration, and affections of the nervous system; but we believe that better results will be obtained in these stages by iodide of potassium in solution, together with mercurials given in the solid form or by inunction.

The proto-iodide of mercury in doses of $\frac{1}{4}$ to 1 grain is a very useful drug in the later recurrences of the secondary stage. This drug must not be confused with the green iodide of mercury, an unreliable preparation consisting of a mixture, varying in different samples, of oxide and of the proto-iodide of mercury. As the proto-iodide is liable to become oxidised when mixed with organic excipients to form pills, the tabloids may be conveniently and safely prescribed.

Inunction is another and most excellent method by which mercury may be administered, and for this purpose the Unguent. Hydrargyri is the best preparation. Inunction is advisable for those cases in which mercury in any form, and even when combined with opium, disorders the stomach and bowels. The method is, however, disagreeable and very inconvenient to most patients; it is also impossible to ascertain the quantity of mercury actually absorbed, and profuse salivation is sometimes rapidly caused. When, however, this method is selected, a good plan is to direct the patient to rub every morning a drachm of the blue ointment into the sole of the right and left foot alternately, the foot being washed at night. Absorption is promoted by the warmth and movements of the foot, and the part can be readily cleansed. For patients to whom the marks of blue ointment upon the linen are of no consequence, the application may be made daily to various other parts of the body in turn, such as the inner surfaces of the thighs, sides of chest, back, and inner surfaces of arms and forearms. About a drachm of the ointment should be rubbed in for ten or fifteen minutes; and the rubbing may be done, if necessary, by an attendant whose hand is protected by a glove. The blue ointment is preferable to the oleates of mercury; if the ordinary mercurial ointment is too strong, a very useful preparation, the Unguentum Hydrargyri Cinerei,* may be used instead.

Mercurial ointments rubbed into the skin sometimes produce an eczematous eruption which occasionally persists for a considerable time, and in some cases reappears at long intervals after the remedy has been discontinued.

With regard to the time during which the frictions are to be used, this must depend upon the nature of the case, and the condition of the patient. Signs of salivation must be carefully watched for, and the frictions must be discontinued or used less frequently as soon as the gums are the least swollen or tender. As a general rule, some effect upon the mouth is noticeable after the frictions have been employed for two or three weeks. The diet and manner of living should be such as were recommended in a previous paragraph. Constipation, if present, should be counteracted by the use of mild purgatives, and in debilitated patients, tonics, such as quinine, iron, and cod-liver oil, may be advantageously combined with the mercurial treatment.

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* Adipis Preparati .. ℥ vj.
Sevi .. .. .. ℥ iv.
Hydrargyri .. .. ℥ v. Pharm. London Lock Hosp.

In the large majority of cases of syphilis, the administration of mercury, either internally or by inunction, is followed by subsidence of all local symptoms, and if the patient's health has become impaired, by considerable improvement in the general appearance and condition. It is true that loss of weight is usually one of the first effects of a mercurial course, but this is quickly followed by an increase, sometimes to such a degree that the patient becomes decidedly heavier than before. The number of red corpuscles in the blood is almost invariably increased when mercury is properly given.

Inunction is the usual routine method pursued at Aix-la-Chapelle (Aachen) and other continental resorts. The waters do not contain any antisyphilitic remedies, and all the good effects of inunction can be as readily and easily produced in England as abroad; we find no difficulty whatever in carrying out the inunction treatment thoroughly in London.

Besides using inunction in the secondary stage, we frequently recommend it, or intra-muscular injections of mercury, in the tertiary stage, giving the course either with or after iodide treatment, as the circumstances of the case demand.

Mercury may also be administered in another manner—namely, by fumigation. This method is peculiarly suitable for the treatment of the cutaneous affections, and it may be combined with the internal administration of the drug. That mercury has a *direct local* action upon the manifestations of syphilis has been proved by the results of the hypodermic injections of the perchloride. In one case, a confluent papular syphilide upon the shoulder became much paler in colour after the hypodermic injection of the perchloride into its centre, while patches of eruption on other parts of the body remained unaltered. The same result is often seen to follow the use of ointments containing various preparations of mercury.

Fumigation, as a method of administering mercury, dates from the time when syphilis was epidemic. The plan fell into comparative desuetude, until it was revived in this country by Mr. Langston Parker. Various preparations of mercury may be used for this purpose: of these calomel is the most convenient, and its vapour may be advantageously combined with steam, so as to form a moist bath. The apparatus required consists of a spirit-lamp placed in a cage of wire-gauze; the central portion of the roof is formed by a plate to hold the calomel, while a metallic trough, to hold water, occupies the circumference. The patient sits on a cane-bottomed chair, and is enveloped in blankets, or a cloak made for the purpose. The bath should be taken at bedtime. From ten to sixty grains of resublimed calomel are placed on the central plate; hot water is poured into the circular trough, and the lamp is then lit and the apparatus is placed under the chair. In from fifteen to twenty minutes it will be found that both the calomel and the water have disappeared by evaporation. It is advisable that the patient should open the upper part of the cloak, and inhale the vapour for half a minute or more, three or four times while taking the bath, and that he should go to bed without wiping off the thin layer of calomel deposited on his skin. The bath is to be repeated according to circumstances. In some persons it causes symptoms of weakness and prostration, and when this is the case, it should be used every second or third night. In other cases, no such unpleasant effects are produced, and the patient may take the bath every night and continue it until all symptoms have disappeared. Salivation is very rarely induced.

In the absence of any special apparatus, a mercurial vapour-bath can be prepared by sprinkling the calomel on a hot brick, which, together with a vessel containing boiling water, is placed under the chair as before. The effect of the baths upon syphilitic skin-affections is generally rapid and satisfactory, but as regards the curative effects of the remedy, this method of administering mercury is far less advantageous than the internal exhibition and the method by inunction. Many of the syphilitic eruptions of the face are very satisfactorily treated by fumigation.

Baths containing a solution of the perchloride of mercury are very rarely used in this country. It may, indeed, be doubted whether any of the mercury is absorbed by the sound skin. Where abrasions or ulcerations exist, absorption will probably take place, but for such cases, the vapour bath constitutes the best method. For children suffering from cutaneous symptoms of hereditary syphilis, the frequent use of a bath containing from twenty to forty grains of the perchloride is often followed by excellent results.

Of the various ways by which mercury can be introduced into the system, for the treatment of syphilis, the intra-muscular injection of mercury or its salts is the most modern, the hypodermic method having been first practised by Lewin in 1867. It is, at the same time, a means of treatment the least used in this country, although abroad, especially in Germany, it is very often employed. Its more general use in this country has been strongly advocated by a few syphilographers, and we are convinced that it is a very valuable method of treating many cases of syphilis.

Intra-muscular injections are made both with the soluble and the insoluble salts, as well as with mercury itself in the form of "grey oil."

There are many objections to the use of the insoluble salts, for the following accidents may supervene—severe stomatitis, painful swellings at the seat of the injections, abscess, pulmonary infarction, and severe mercurialism. As death has occasionally resulted from the intra-muscular injections of the insoluble mercurial salts, and other accidents mentioned above are liable to occur, we do not recommend this method of treatment.

On the other hand, we may point out that we have in intra-muscular injections of the soluble mercurial salts a very valuable and energetic means of combating the virus of syphilis.

Almost every soluble salt of mercury has been tried in the endeavour to find one which, whilst being efficacious in the treatment of the disease, produces the minimum of local reaction.

The two salts which we prefer are the sal alembroth, and a solution of sozoiodol of mercury in iodide of sodium. The following are the formulæ which may be employed.

Perchloride of mercury ...	32 grs.
Chloride of ammonium ...	16 grs.
Distilled water	2 ozs.

10 minims, equal to $\frac{1}{3}$ gr. of sal alembroth, to be used for an injection.

Sozoiodol of mercury	...	...	5 grs.
Iodide of sodium	...	...	10 grs.
Distilled water	...	...	200m.

10 to 15 minims for an injection.

By the use of intra-muscular injections of either of these salts, the cutaneous and other secondary manifestations quickly clear up. There is not very much difference between the results obtained by the two; but Mr. Cotterell gives a preference to the sozoiodol salt, for the special reason that he does not think, judging from the statements of patients, that it produces so much inconvenience at the site of injection as the sal alembroth solution.

In using the intra-muscular injections, there are certain precautions which must be taken in order to prevent any untoward results, which would bring a very valuable therapeutic remedy into disrepute.

In the first place, with regard to the choice of the salt, it goes almost without saying that any irritating or caustic preparation must be avoided.

The solution used should be sterile, and gives the best results when freshly prepared.

In choosing a syringe, preference should be given to one which can be easily cleaned and sterilised, and the mounts should be of vulcanite in order to prevent oxidation.

It is preferable to have the needle made of platino-iridium, as a steel one is liable to rust; but, if the syringe and needle are well washed with water, and then with absolute alcohol after use, a steel needle will last for a considerable time. Platino-iridium needles are, however, now made very cheaply, and being very hard at the point are not quickly blunted.

The skin over the proposed site of the injection should be rendered as aseptic as possible by washing it with carbolised lotion, or with absolute alcohol.

The most convenient site for the injections is the upper part of the gluteal region. It is necessary to get the injection well into the muscle-substance, as if only the subcutaneous tissue is reached, a hard and painful swelling will remain. The best spot to select in the gluteal region is either at the junction of the inner and middle thirds, about the level of the top of the great trochanter, or the retro-trochanteric fossa.

The needle must be pushed in at right angles to the surface until it is judged that the point is well in the gluteus maximus muscle, when the solution is *slowly* injected. The depth to which the needle should be inserted will necessarily vary in different patients according to the development of the subcutaneous fat in this region. It is a good plan to inject each side alternately.

If the above directions are carried out, it will be found that the injection causes very little or no pain, and produces only a very slight amount of local reaction and discomfort; the recipient will complain only of a bruised feeling, which passes off in a short time. It is obvious that in repeating the injections, a point should be chosen at a little distance from the site of the older punctures.

The patient should, in ordinary cases, have an injection once a week for about six or seven weeks, or until all skin and throat manifestations have disappeared, when once a fortnight will be found sufficient for another three or four months. After this once a month will suffice. The treatment should be persevered with for at least eighteen months or two years, and if possible the patient should be kept under observation for three years, and longer than that if it can be arranged.

In cases where it is necessary to get the patient thoroughly and quickly under the influence of mercury, as in eye-lesions and where the nervous system is affected, the injections may be repeated daily until the desired effect is produced.

The following advantages are claimed for this method of treating syphilis:—

The treatment is entirely in the hands of the surgeon, and thus one is certain that the amount of mercury prescribed is administered.

A definite amount of mercury is introduced into the system.

The alimentary canal is not upset; and salivation is a very rare accident.

We have in this method a very sure and rapid means of producing the effects of mercury in cases of grave and threatening visceral lesions.

The intravenous injection of sal alembroth has been mentioned in the chapter on "Diseases of the Nervous System," p. 322.

As a matter of course, the directions given above for the use of mercury apply also to cases in which secondary symptoms have appeared and the drug has been withheld, or given in an insufficient quantity.

Certain circumstances contraindicate the use of mercury, while others require that special precautions should be taken. Mercury is to be given for a primary sore, as soon as manifest induration is present, and the diagnosis of syphilis is established. It must, of course, not be given when there is the least symptom of sloughing or phagedæna, and if these complications ensue under its use, it must be immediately discontinued.

Mercury should not be given to patients suffering from phthisis in a well-marked form, but the resemblance between the symptoms of this disease and those of syphilitic affections of the lungs (see page 216) must be borne in mind. When the phthisical symptoms are not far-advanced and the patient's general health is tolerably good, mercury need not be withheld, provided that great caution be used. If it appear to aggravate the chest symptoms, iodide of potassium should be substituted for it. Patients suffering from albuminuria, not due to syphilis, are not fit subjects for a mercurial course. Severe salivation is liable to be induced after a few doses of the medicine, which would then have to be discontinued. With regard to tubercular subjects mercury is, as a general rule, badly borne by such patients. If, however, the symptoms of syphilis are severe, while those of tubercle are not very prominent, mercury may be given tentatively and in small doses. The biniodide, dissolved in solution of iodide of potassium, is a very suitable preparation for these cases. Tonics, especially cod-liver oil and iron, should be given at the same time. If the mercury aggravates the tubercular symptoms, iodide of potassium must be substituted for it; but cases requiring this change are few and far between, and it rarely happens that, by a judicious selection of the mercurial preparation, and with appropriate doses, we cannot overcome this difficulty.

In very anæmic subjects suffering from syphilis, caution is necessary in administering mercury. If, however, the condition is due to syphilis, it will certainly be improved by mercury, the use of which, in small doses, has been shown to increase the number of red corpuscles in syphilitic patients. In such cases the improvement in the appearance of the patient will proceed *pari passu* with that of the symptoms of the disease. If the anæmia is due to organic disease, to malarial fever, dysentery, etc., or to incautious use of mercury at a previous time, the iodide of potassium, combined with tonics, must be substituted for mercurials. In the last place, it must be remembered that some patients are very prone to become salivated, even with very small doses of mercury, and in the absence of any obvious cause for this peculiarity. Several well-authenticated cases have been placed on record proving that severe ptyalism may be caused by a few grains of any mercurial preparation.

It remains now to describe the local mercurial treatment of the manifestations of syphilis. This is altogether subordinate to the general treatment, but local applications often accelerate the disappearance of the cutaneous and mucous lesions. Directions have already been given for the local treatment of the primary sore, of condylomata, and of syphilitic affections of the mouth and nose. The milder cutaneous eruptions almost invariably subside under constitutional treatment.

The mercurial vapour bath is especially suitable for cases in which the eruptions prove obstinate, and particularly when the face is affected. Calomel ointment (made with *precipitated* calomel), or the Unguent. Hydrarg. Nitrat. may be applied to chronic papular eruptions; and the so-called "psoriasis" of the palms and soles requires frequent soaking in warm water, and, after thorough drying, the application of either of the above ointments, or of the Unguent. Hydrarg. Oxid. Rub. If the lesions prove obstinate to these remedies the oleate of mercury may be tried. Pustular eruptions, unless very severe, require no local treatment, beyond being protected from irritation. When scabs and crusts form, one of the ointments mentioned above may be applied. In severe cases, the scabs or crusts should be removed by sponging with warm water, or boric lint fomentations, and finely-powdered iodoform should then be applied on a soft brush. Secondary and tertiary ulceration, due to syphilis, requires particular local treatment. When the ulcers are small and scattered, the red ointment is the most suitable application. If they are very painful, they should be dusted over with iodoform, reduced to an extremely fine powder. Serpiginous ulceration may be treated in the same way. The ulcers left after the detachment of rupial crusts should be dressed with the red ointment; and if profuse granulations spring up, nitrate of silver should be applied. Cutaneous gummata should be covered with mercurial ointment, or the red ointment, in order to promote absorption. If, however, disintegration takes place and fluctuation becomes perceptible, it is best to allow the swelling to open spontaneously. When the contents have been discharged, some one of the above-mentioned ointments may be applied to the opening, and if an ulcer results, iodoform should be dusted over it. When the base of such an ulcer is indolent and foul, and shows no disposition to heal, it should be painted over several times with a solution of carbolic acid, one part to four of water. As a matter of course, constitutional treatment must, at the same time, be continuously persevered with.

As a general rule, the primary and secondary stages of syphilis require mercurial treatment, while the iodide of potassium is the main remedy to be relied on for dealing with the tertiary symptoms and visceral lesions. It is also useful for some of the manifestations of the secondary stage, especially the late pustular eruptions and the various affections of the bones. Its effects, however, though more rapidly produced than those of mercury, are, as a general rule, less permanent. A combination of the two remedies is also sometimes more efficacious than either used separately.

The iodide of potassium is given internally in solution, or in the form of pills, and it may also be administered by the rectum. Iodine itself is seldom given internally, but its external application, in the form of tincture or liniment, is useful for glandular enlargement and superficial affections of the bones and periosteum. When taken internally, the iodide is very rapidly absorbed into the blood, and it soon appears in the various secretions and excretions. The ordinary dose is from five to fifteen grains, and it is well to begin with a comparatively small quantity, and to increase it, when necessary, by the daily addition of two or three grains to each dose. In cases of disease of the bones, of obstinate cutaneous or mucous ulceration, and of syphilitic affections of the nervous system, it is often necessary to prescribe large doses, such as three drachms, or even more, daily (see page 322).

The good effects of the iodide are increased by the addition of a few grains of carbonate of ammonia to each dose. Seltzer water, or some effervescing combination, forms the best vehicle for the large doses, which should be administered, well diluted, after food.

Iodide of potassium sometimes occasions nausea, vomiting, pain and heat in the stomach, purging, and symptoms of nasal catarrh; and in some persons very small doses suffice to produce these symptoms. The nasal catarrh is the most common; it is accompanied by frontal headache, lachrymation, œdema of the neighbourhood of the orbit, swelling of the nostrils, and occasionally by the development of a papular or vesicular eruption on the face and neck. Severe œdema of the glottis, necessitating tracheotomy, is the most serious symptom that has been noticed. In other cases it produces a petechial rash, and in others an eruption of bullæ. In addition to these obvious results, iodide of potassium sometimes causes much bodily and mental depression, loss of appetite and feelings of general discomfort, and these symptoms may occur in the absence of gastric irritation or nasal catarrh.

All these unpleasant effects can best be obviated by administering the drug in the manner above described; and if the symptoms are still troublesome, the iodide of ammonium or sodium should be tried. In cases where the stomach refuses to tolerate the iodides in any form, they may be administered by the rectum in doses of twenty or thirty grains, dissolved in an ounce of thin mucilage. As a general rule, however, if proper precautions be observed, the iodide of potassium, even in very large doses, is well borne by the patients; and its effects upon severe pustular eruptions, rupia, severe ulceration of the throat, bony lesions and cerebral symptoms are generally rapid and satisfactory in the highest degree. Whether iodide of potassium can be said to possess any *curative* power over syphilis is extremely doubtful, and, in our opinion, it has none, for which reason we always recommend a mercurial course, either in conjunction with, or to follow, the iodide treatment; it has no effect upon the primary induration and the earlier secondary symptoms; on the other hand, the longer the disease has lasted, the greater the power of the iodide over its manifestations.

There are but few contra-indications to the use of iodide of potassium. It may be given in all cases in which its use is advisable, unless the symptoms it produces are so severe as to necessitate its discontinuance. It is often administered to patients after a course of mercury, and salivation is sometimes induced in these cases. When mercury is given for any considerable period it is said to be deposited in an insoluble form in the structures of the body; iodide of potassium redissolves the mercury, which again passes into the circulation and produces its effects upon the system. If much mercury has been disposited in the tissues, salivation is very likely to be produced. The iodide by itself has been known to produce salivation in a few cases.

With regard to the combinations of mercury and iodine, they are especially indicated for the later secondary and the tertiary stages. The green iodide has been recommended for the primary induration, but it is not a stable article; the proto-iodide is the pure form and is a very useful drug. It should be prescribed in powder or tabloids, as moisture causes it to become oxidised. In tubercular subjects, however, the combination of the biniodide of mercury with iodide of potassium is frequently advisable; a similar combination is often serviceable in relapsing cutaneous affections, and in obstinate tertiary lesions, upon which the iodide of potassium alone makes no impression, although given in full doses. I have sometimes given Donovan's solution, but have not had much success with it. The chloride of gold is sometimes useful in cases of obstinate tertiary symptoms. In lesions of the nervous system, due to syphilis, it is often advisable to combine the bromide with the iodide of potassium. In cases in which anæmia and debility are well-marked symptoms in a syphilitic subject, various tonics, such as cod-liver oil, iron and bark, may be given during a course of the iodide. The diet should be of a nutritious character, stimulants in moderation may be allowed, and efforts should be made to improve the patient's general health in every possible way.

Certain vegetable decoctions have been much lauded from time to time in the treatment of syphilis. The best known medicines of this class are sarsaparilla and guaiacum. With regard to the former, the decoction is a useful vehicle for the iodide of potassium; but it appears, in some cases, to exercise a specific action of its own. In several cases of syphilitic ulceration of the tongue, under my care, speedy improvement followed the administration of large doses of decoction of sarsaparilla, the iodide having been productive of little or no benefit. The decoction must be given in large quantities—viz. from one to two pints in the twenty-four hours. The guaiacum mixture is useful in the chronic syphilitic affections of the bones and joints, accompanied by pains resembling those of rheumatism. It may be given with the iodide of potassium. It is worthy of notice that in the 16th, 17th, and 18th centuries, guaiacum was regarded as a specific for syphilis. The patient was, however, very carefully prepared for the administration of the remedy; the action of the skin was vigorously promoted, purgatives were administered, and the diet was restricted; and it is probable that the good effects were mainly due to these measures.

It occasionally happens that some tertiary lesions prove very obstinate to treatment, both iodides and mercurials apparently aggravating the symptoms. In these cases a course of Zittmann's decoctions will often prove most beneficial, healing rapidly taking place and other symptoms quickly disappearing under its influence. The course of treatment extends to about a fortnight, during which time the patient is put upon a strict diet and regimen. The following are the details of this method of treatment.

The decoctions and pills are made from the following formulæ:—

Zittmann's Decoction. No. 1.

℞ Rad. Sarzæ Contus.	℥ iv.
Sem. Anisi ,,	
Sem. Fœniculi ,,	āā ʒ j ℈ j.
Fol. Sennæ	℥ j.
Rad. Glycyrrh. Contus.	ʒ iv.

And in a linen bag:—

Sacchar. Alb.,	
Alum. Sulph.	āā ʒ ij.
Hydrarg. Subchlor.	ʒ j. ℈ j.
Hydrarg. Bisulph. Rub.	℈ j.
Aquæ	Cong. iij.

Boil gently down to one gallon, strain, and put into four forty-ounce bottles. Sign.: THE STRONG DECOCTION.

Zittmann's Decoction. No. 2.

To the dregs from No. 1 decoction add:—

Rad. Sarzæ Contus.	℥ ij.
Cort. Limon. ,,	
Sem. Cardam. ,,	
Rad. Glycyrrh. ,,	āā ʒ j.
Aquæ	Cong. iij.

Boil gently down to one gallon, strain, and put into four forty-ounce bottles. Sign.: THE WEAK DECOCTION.

℞ Hydrarg. Subchlor.	gr. ij.
Ext. Coloc. Co.	gr. v.
Ext. Hyoscyam.	gr. ij.

M. ft. pil ij. Sign.: THE PILLS.

The patient is kept in a room at 80° F. The diet consists of:—

Breakfast.	Boiled egg or bacon. Tea, no sugar or spices.
Lunch.	Butcher's meat, vegetables. No fruits.
Dinner.	Soup, fish, poultry.

The evening before beginning the treatment, the two pills are taken, and for the next four days at 9 a.m., 10 a.m., 11 a.m., and 12 a.m., half a pint of the strong decoction drunk very hot, and at 3 p.m., 4 p.m., 5 p.m., and 6 p.m., half a pint of the weak decoction cold. The patient is kept in bed except for one hour every evening. On the fifth day, the patient is allowed to get up, he may have a hot bath, and dress, and is allowed, if he asks for it, a little brandy or whisky and soda. In the evening two pills are administered, the patient starting the decoctions the next day as before. So the treatment goes on until the fifteenth day, when it is discontinued.

Any one who has not witnessed the results obtained by this method of treatment, where the mercury and iodide plan has been pursued with no apparent benefit, will hardly credit us when we state that we have seen many of these cases, in which ulceration was rapidly progressing in spite of ordinary anti-syphilitic treatment, quite heal up under a course of "Zittmann." So, too, among the subjects of chronic syphilis affecting the nervous system, we have had many successful instances treated by this method, and strongly recommend it in selected cases.

The injection of animal serum has been advocated by Tommasoli,* Cotterell,† and others, as a means of combating the virus of syphilis. The idea of this method of treatment originated in the well-known fact that animals are invariably refractory to syphilis; so the question naturally arose whether this immunity might not be utilised as a means of curing the disease in man by subcutaneous injections of animal serum.

Although, doubtless, these injections, when given with proper precautions, exercise a marked benefit upon the general health, and have apparently some action upon the syphilitic poison; still, up to the present time, the number of cases in which this remedy has been tried are too few in number, and have not been long enough under observation for us to state definitely that injections of animal serum have a direct anti-toxic action upon the poison of syphilis.

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* "Gaz. degli Ospitali," 1892.

† "Medical Press and Circular," 1893.

From the marked effect that thyroid extract has upon some cases of skin disease, such as psoriasis, it has been suggested that the exhibition of this remedy may prove useful in syphilis. From some cases which have been recently recorded in the journals, it would appear that thyroid tabloids do promote the disappearance of some of the skin-manifestations of syphilis, but whether it is a curative, or only a palliative agent, it is yet too early to determine. A longer and more extended trial of the remedy will probably determine this point.

In addition to the strictly medicinal treatment of syphilis, there are other therapeutic measures which demand a brief description, and which constitute more or less valuable auxiliarics. The importance of suitable diet, fresh air, a moderate temperature, a due amount of exercise, and the careful avoidance of all injurious influences, cannot be too strongly insisted upon. The mischievous effects of alcoholic excesses have been already referred to, and it is not too much to say that a patient who observes all the rules of hygiene, but takes no medicines, has far better chances of recovery from syphilis than one who freely swallows mercury and the iodide, and at the same time indulges freely in alcohol and leads a dissipated life in other respects. The elimination of the syphilitic virus requires that all the functions of the body should be in the healthiest possible condition, and the effects of the medicinal treatment are materially assisted by promoting excretion from the skin. Vapour-baths and warm baths are the principal means for attaining this object.

Certain mineral waters have enjoyed a considerable reputation in the treatment of syphilis, and those containing sulphur have been regarded as the most efficacious. Several virtues have been attributed to these springs. They have been considered as directly curative of syphilis; they have been credited with the power of removing mercury from the system; and, lastly, with that of awakening and bringing to the surface latent syphilis. The possession of this last property has caused the use of these waters to be regarded as a test of the completeness or otherwise of a cure in any given case. The most noted springs of this kind are those of Aix-la-Chapelle, Barèges, Bagnères de Luchon, and Aix-en-Savoie, and the patients drink, as well as bathe in, the waters. There is, however, no sufficient evidence that water containing sulphur has any special action upon syphilis, or that its effects differ in any way from those of ordinary water. Warm baths increase the perspiration and cause increased activity of tissue-change, and in this way are useful adjuvants in the treatment of syphilis. It must be remembered that at Aix-la-Chapelle and similar bathing places, mercurials and the iodide of potassium are freely used while the patient is undergoing a course of bathing, and it is in the highest degree probable that the beneficial effects observed are mainly due to the medicinal treatment. It is claimed, however, that the thermal treatment successfully combats syphilitic affections by giving new properties to iodine and mercury. Where pain in the bones is a prominent symptom, considerable relief is often obtained after a few baths at Aix-la-Chapelle and elsewhere, but ordinary warm baths would be equally efficacious in this respect. It is also certain that sulphur-baths do not possess the power of unmasking the latent effects of syphilis, for it has been shown that only in a minority of cases do relapses occur during the course of bathing. Whether the internal and external use of sulphur-waters aids in the elimination of mercury from the system has not been definitely settled. The claim to another property—viz., that of preventing too active effects from the remedy by rendering inactive the excess of mercury administered—can only be regarded as imaginary. While admitting the benefits likely to be derived from warm baths as auxiliaries to medical treatment, we believe, as we have previously stated, that it is quite unnecessary to send patients to Aix-la-Chapelle or other thermal sulphur-springs for the sake of the baths.

With regard to hydropathic treatment, it is sometimes useful in cachectic conditions, whether dependent or not upon syphilis, and complicating its symptoms. The patient's general health is often improved under a mild course of hydropathy, metamorphosis of tissue is excited, the skin becomes more active, and the appetite is increased. These results, together with the regimen prescribed, are extremely advantageous for the patient and increase his prospects of recovery. The bracing and depurating effects of the Turkish bath are well seen in many cases of syphilis. Its good effects are demonstrated by the rapid recoveries from syphilis, as is often witnessed in the cases of persons, attendants in Turkish baths. The disease, moreover, always assumes a mild type in these patients.

For the sake of completeness, and also because the subject possesses some amount of historical interest, a brief reference to the method of treating syphilis, miscalled "syphilisation," may not be out of place. The method in question owes its origin to some experiments performed by Auzias Turenne, the results of which were communicated to the Paris Academy of Science in 1850.* M. Turenne inoculated the secretion of ulcers *supposed* to be syphilitic upon animals and upon the human subject, and he found that after the operation had been more or less frequently repeated upon the same subject, the inoculation failed to produce any effect. He was led to believe that persons might thus be rendered insusceptible of syphilis; the inoculations sufficiently often repeated, were regarded as *prophylactic.* A few months later Dr. Sperino,† of Turin, proposed to apply this method to the *treatment* of constitutional syphilis. The idea of preventive syphilisation was soon discarded; but the method was practised for some time with a view of curing the disease. The whole proceeding, however, is based upon error. It has been shown to demonstration that the secretion from a *syphilitic* sore is not inoculable as *such* upon the bearer of it. The result is either negative, or the production of a sore resembling a soft chancre. Pseudo-syphilitic sores are of course auto-inoculable, and repeated crops of ulcers may be produced by successive inoculations from the sores thus caused. Immunity is at last obtained—that is to say, no new sore makes its appearance. It must be observed that there is no incubation-period in connection with these sores; and further, that they are utterly unlike the typical hard sore. It is not the virus of syphilis which is inoculated. The method was practised principally in Norway, where the late Dr. Boeck, of Christiania, was its warmest advocate. Some years ago Dr. Boeck came over to this country and was allowed to exhibit his method on many patients in the Lock Hospital. He failed, however, to convince those who watched his practice and its results, that the method was for any reason worthy of adoption. Even those who were inclined to give it a trial were forced to believe that it had no curative effect upon the disease, while its drawbacks—viz., the length of time required, the pain often caused by the ulcers and unsightly scars which remained—were undeniable and serious. The method has, therefore, long been relegated to the obscurity which it deserves.

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* "Lettre à l'Académie des Sciences," November 18, 1850.

† "Communication à l'Académie de Médecine de Turin," May 23, 1851.

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